PART A

IONOSPHERIC DATA

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U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

CRPL-F 151
PART A

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
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CONTENTS

SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, and continuing through December 1956, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

Beginning with data for January 1957, the symbols used are given in NBS Report 5033, "Summary of Changes in Ionospheric Vertical Soundings, Observing and Scaling Procedures - Effective 1 January 1957," which draws upon the First Report of the Special Committee on World-Wide Ionospheric Soundings (URSI/AGI), Brussels, Sept. 2, 1956. A list of these symbols is available upon request.

Beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given above.

a. For all ionospheric characteristics:

Values missing because of A, C, F, H, L, N, R or S are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F (and h'E near sunrise and sunset) missing for this reason are counted usually as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count.

Values missing because of G are counted:

1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

The symbol W is included in the median count only when it replaces a height characteristic; the descriptive symbol D, only when it replaces a frequency characteristic.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of E or G (and B when applied to the daytime E region only) are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit of the recorder.

At night B for fEs is counted on the low side when there is a numerical value of foF2; otherwise it is omitted from the median count.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If the count is four or less, the data are considered insufficient and no median value is computed.

2. For the F2 layer, h'F or foEs, if the count is from five to nine, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as the count is at least five, the median is not considered doubtful. A count of at least 5 is considered sufficient for an h'Es median.

3. For all layers, if more than half of the data used to compute the medians are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

a. Differences in scaling records when spread echoes are present.

b. Omission of values when foF2 is less than or equal to foF1, leading to erroneously high values of monthly averages or median values.

c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily, a blank space in the fEs or foEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of foE. Blank spaces at the beginning and end of columns of h'F2 or h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.

b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

d. The tables may contain median values of either foEs or fEs. The graph of median Es corresponds to the table. Percentage curves of fEs are estimated from values of foEs when necessary.

PREDICTED AND OBSERVED SUNSPOT NUMBERS

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot Number										
	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947
December		150	42	11	15	33	53	86	108	114	126
November		147	35	10	16	38	52	87	112	115	124
October		135	31	10	17	43	52	90	114	116	119
September		119	30	8	18	46	54	91	115	117	121
August	150*	105	27	8	18	49	57	96	111	123	122
July	150*	95	22	8	20	51	60	101	108	125	116
June	150*	89	18	9	21	52	63	103	108	129	112
May	150*	77	16	10	22	52	68	102	108	130	109
April	150*	68	13	10	24	52	74	101	109	133	107
March	150*	60	14	11	27	52	78	103	111	133	105
February	150*	53	14	12	29	51	82	103	113	133	90
January	150*	48	12	14	30	53	85	105	112	130	88

*This number is believed representative of solar activity at a maximum portion of the current sunspot cycle.

The latest available information follows concerning the corresponding observed Zürich numbers (some of which may be subject to minor change) beginning with the minimum of April 1954.

Observed Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	73	81
1956	89	98	109	119	127	137	145	148				

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 72 and figures 1 to 143 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Republica Argentina, Ministerio de Marina:
- Buenos Aires, Argentina
- Decepcion I.

Commonwealth of Australia, Ionospheric Prediction Service of the Commonwealth Observatory:
- Brisbane, Australia
- Canberra, Australia
- Hobart, Tasmania
- Townsville, Australia

Australian Department of Supply and Shipping, Bureau of Mineral Resources, Geology and Geophysics:
- Watheroo, Western Australia

University of Graz:
- Graz, Austria

Meteorological Service of the Belgian Congo and Ruanda-Urundi:
- Elisabethville, Belgian Congo
- Leopoldville, Belgian Congo

Defence Research Board, Canada:
- Baker Lake, Canada
- Churchill, Canada
- Ottawa, Canada
- Resolute Bay, Canada
- Winnipeg, Canada

Institute for Ionospheric Research, Lindau Uber Northeim, Hannover, Germany:
- Lindau/Harz, Germany

Indian Council of Scientific and Industrial Research, Radio Research Committee, New Delhi, India:
- Ahmedabad (Physical Research Laboratory)
- Bombay (All India Radio)
- Calcutta (Institute of Radio Physics and Electronics)
- Delhi (All India Radio)
- Madras (All India Radio)
- Tiruchy (All India Radio)
- Kodaikanal (India Meteorological Department)

Geophysical and Geodetic Institute, Genoa, Italy:
Monte Capellino, Italy

Ministry of Postal Services, Radio Research Laboratories, Tokyo, Japan:
Akita, Japan
Tokyo (Kokubunji), Japan
Wakkanai, Japan
Yamagawa, Japan

Christchurch Geophysical Observatory, New Zealand Department of Scientific and Industrial Research:
Campbell I.
Christchurch, New Zealand
Rarotonga, Cook Is.

Norwegian Defence Research Establishment, Kjeller per Lillestrom, Norway:
Tromso, Norway

Telecommunication Administration, Oslo, Norway:
Svalbard, Norway

Manila Observatory:
Baguio, P. I.

South African Council for Scientific and Industrial Research:
Capetown, Union of South Africa
Johannesburg, Union of South Africa

Research Institute of National Defence, Stockholm, Sweden:
Kiruna, Sweden

Post, Telephone and Telegraph Administration, Berne, Switzerland:
Schwarzenburg, Switzerland

United States Army Signal Corps:
Adak, Alaska
Okinawa I.
White Sands, New Mexico

National Bureau of Standards (Central Radio Propagation Laboratory):
Anchorage, Alaska
Fairbanks, Alaska (Geophysical Institute of the University of Alaska)
Narsarssuak, Greenland
San Francisco, California (Stanford University)
Talara, Peru (Instituto Geofisico de Huancayo)
Washington, D. C.

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 73 through 84 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols, Terminology, Conventions." Beginning with September 1949, the data are taken at Ft. Belvoir, Virginia.

The interpretation of a cell is as follows: U F
32

The U is a qualifying symbol meaning doubtful. Other qualifying symbols are I, interpolated, D, greater than, E, less than, J, ordinary component deduced from extraordinary, and T, value determined by a sequence of observations. Absence of a letter in the upper left position means full weight is given to the observation.

Symbols such as F above are given in the upper right position.

There should be no difficulty in the placing of the decimal point. For the time being, a final zero will be found in each value of foF1. Thus at a later date it will be possible to register more closely scaled values of this characteristic, whenever such are reported.

EXAMPLES OF IONOSPHERIC VERTICAL SOUNDINGS
NARSARSSUAK, GREENLAND; DEC. 25, 1956

The following ionograms were obtained at the Narsarssuak, Greenland ionosphere vertical sounding station of the U.S. National Bureau of Standards. They are typical of day and night conditions for December at this geomagnetic latitude (71°N). Ionospheric data are scaled directly from these records onto the daily f-plot, a graph of frequency characteristics vs. time. The f-plot for the day represented by these soundings is found on the following page.

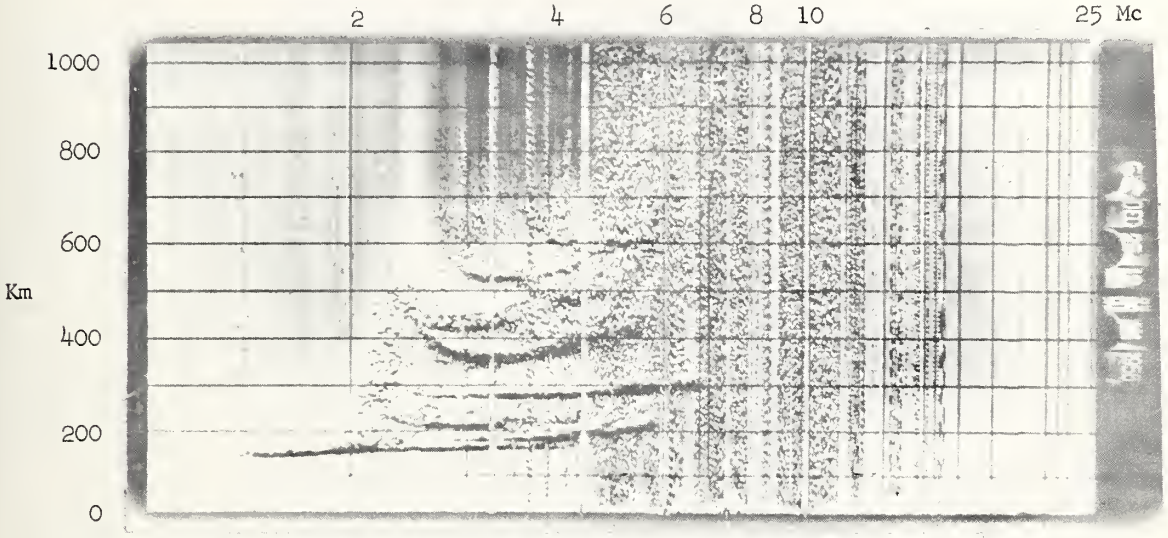


Fig. A. Narsarssuak, Greenland, Dec. 25, 1956, 0000 hour, 45°W time.

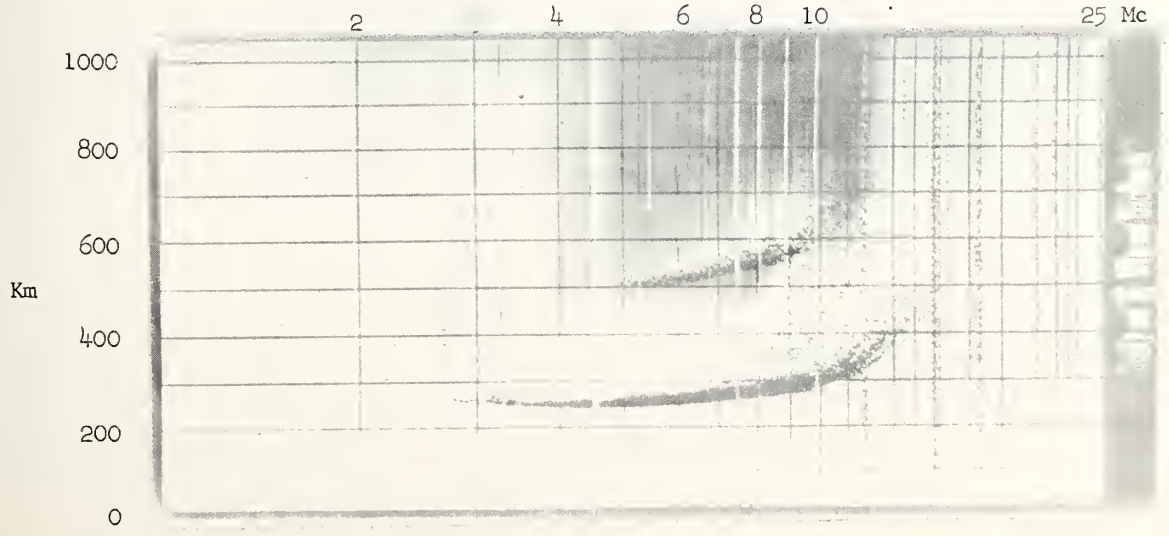
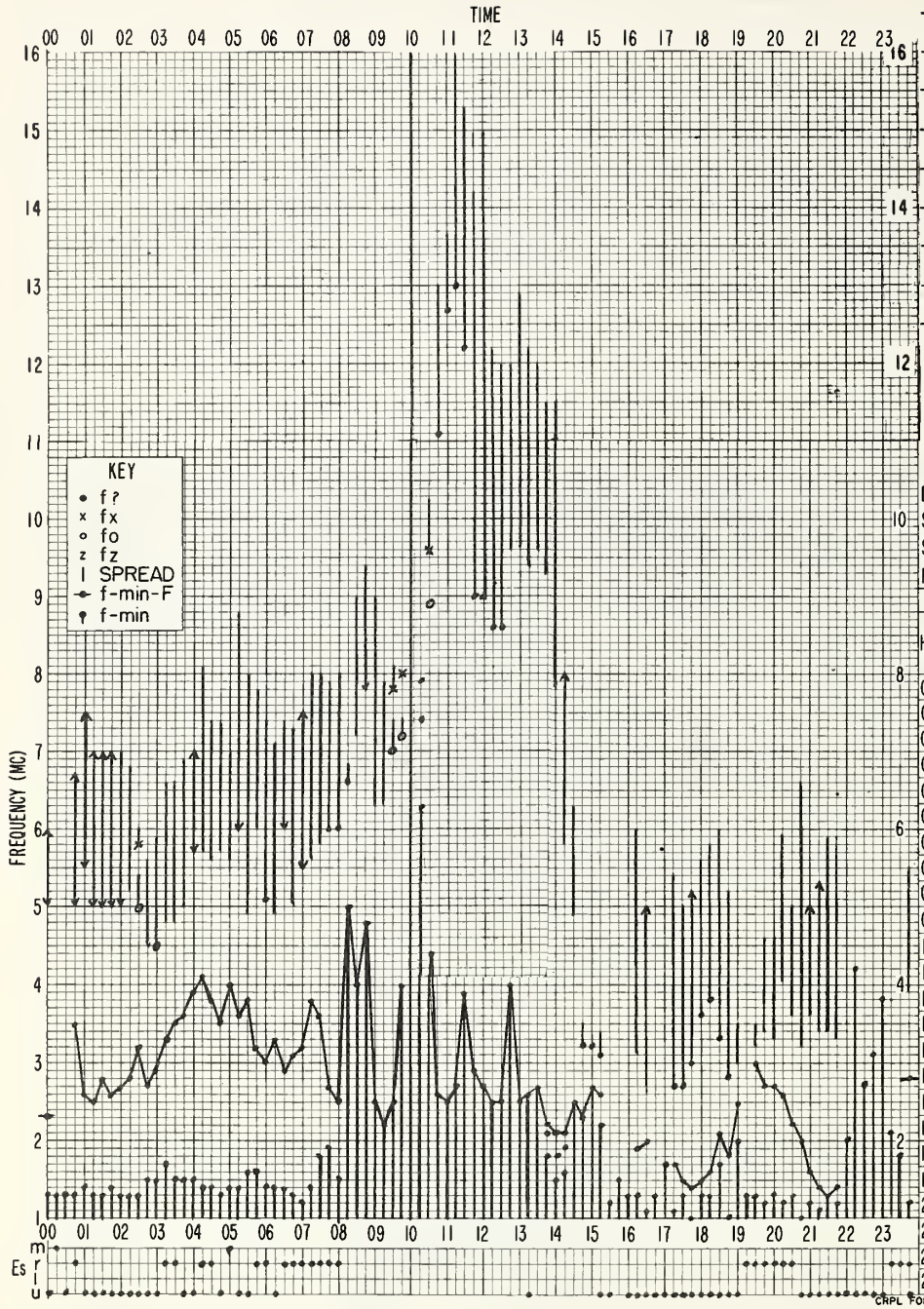


Fig. B. Narsarssuak, Greenland, Dec. 25, 1956, 1200 hours, 45°W time.



f-PLOT OF IONOSPHERIC DATA

DATE DEC 25 1956

STATION NARSARSSUAK, GREENLAND

SCALED BY HEP

MERIDIAN TIME 45° W. Mean Time

UNPLOTTED HOURLY VALUES

HR	F2 M3000	WT	SYM	F1 M3000	WT	SYM	h'E	WT	SYM	fEs	SYM
00			F							058	
01			F							039	
02			F							039	
03	260	2	F							029	
04			F							048	
05			F							054	
06			F							045	
07			F							045	
08			F							038	
09			F								B
10			B			B			B		B
11	280	2	F			Q			B		B
12			F			Q			B		B
13			F			Q			B		B
14			F			Q	143	1	H		G
15	230	2	5								B
16			A							048	
17			A							070	
18			F							038	
19			F							090	
20			F							037	
21			F							033	
22			A							071	H
23			A							045	

CRPL FORM 7-L 10-23-55

Radio Noise Data

The results of radio noise measurements are presented in the following graphs and tables. These are based on three parameters of the noise: (1) the mean power, (2) the mean envelope voltage, and (3) the mean logarithm of the envelope voltage. The mean power averaged over a period of several minutes is the basic parameter and is expressed as an effective antenna noise figure, F_a. F_a is defined as the noise power available from an equivalent lossless antenna in db above ktb (the thermal noise power available from a passive resistance) where

k = Boltzman's constant (1.38×10^{-23} joules per degree Kelvin)

t = Absolute room temperature (taken as 288° K)

b = Bandwidth in cycles per second.

The mean voltage and mean logarithm are expressed as deviations, V_d and L_d respectively, in db below the mean power.

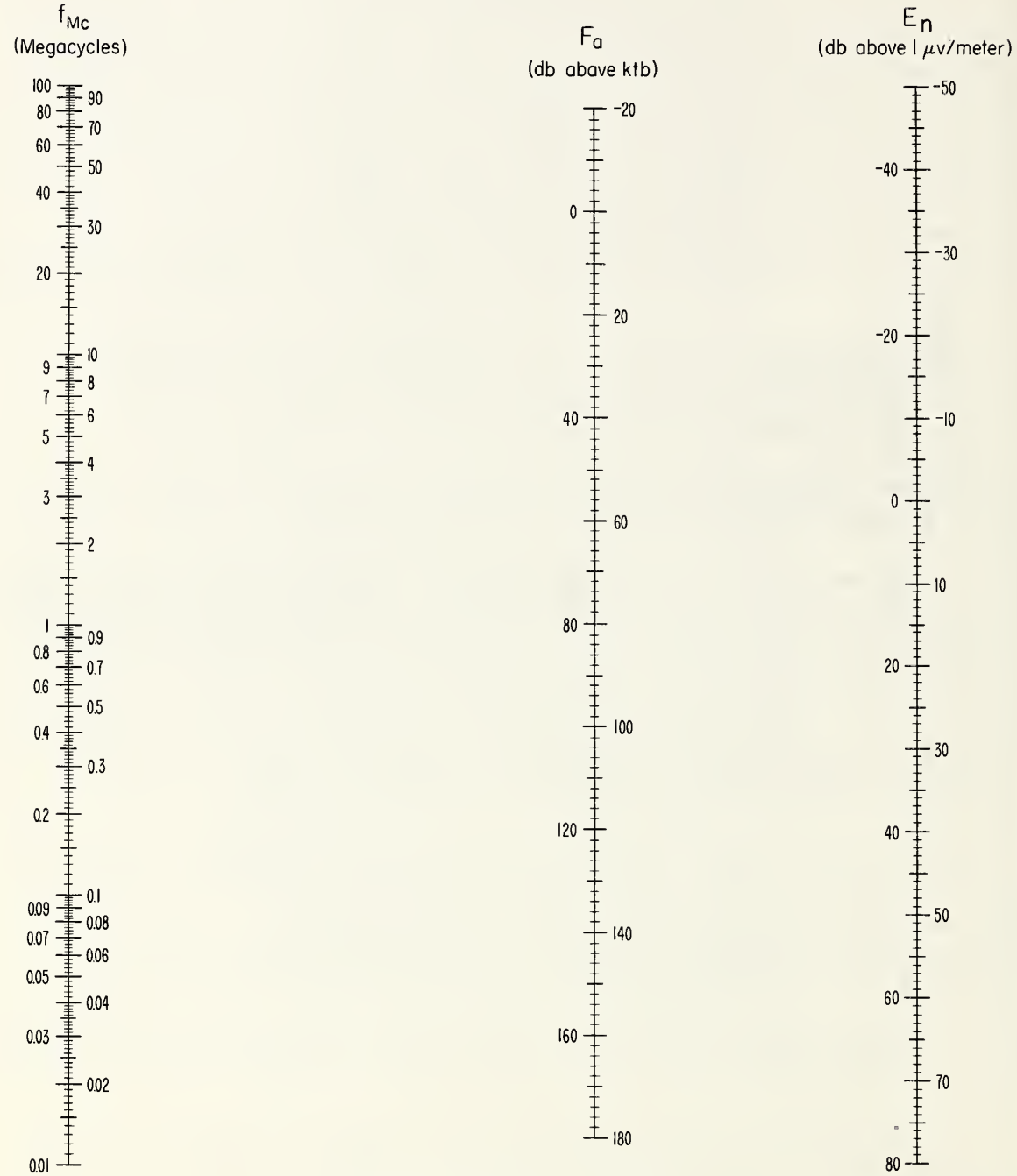
Measurements of these parameters were made with the National Bureau of Standards Radio Noise Recorder, Model ARN-2, which uses a standard 21.75' vertical antenna and provides a 15 minute recording on each frequency each hour. These 15 minute samples were taken as representing the noise conditions for the full hour. The month-hour medians, F_{am}, V_{dm}, and L_{dm} were determined from these hourly values for each of the corresponding parameters and the resulting medians are plotted at the half-hour point on the curves.

The upper and lower decile values of F_a are also reported in the following tabulation to give an indication of the extent of the variation of the noise power from day to day at a given time of day. These are expressed in db above and below the month-hour median, F_{am}, and designated by D_u and D_ℓ respectively.

If it is desirable to convert F_a to an r.m.s. noise field strength, E_n, the nomogram or the equation on the following page may be used.

Information on expected worldwide noise levels and their application to systems problems is presented in NBS Circular 557 (available from the Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C.). More recent estimates of radio noise levels are given in CCIR Report No. 65, "Report on Revision of Atmospheric Radio Noise Data", Warsaw, 1956 (available from the International Telecommunication Union, Geneva).

NOMOGRAM FOR TRANSFORMING EFFECTIVE ANTENNA NOISE FIGURE TO NOISE FIELD STRENGTH AS A FUNCTION OF FREQUENCY



$$E_n = F_a + 20 \log_{10} f_{Mc} - 65.5$$

F_a = Effective Antenna Noise Figure = External Noise Power Relative to ktb Available from an Equivalent Short, Lossless, Vertical Antenna in db Above ktb.

E_n= Equivalent Vertically Polarized Ground Wave R.M.S. Noise Field Strength in db Above 1 μv/meter for a 1 kc Bandwidth.

f_{Mc}= Frequency in Megacycles.

RADIO NOISE DATA

Station Bill, Wyoming Lat. 43.2° N Long. 105.2 W Type Recorder ARN-2 Month Dec. 19 56

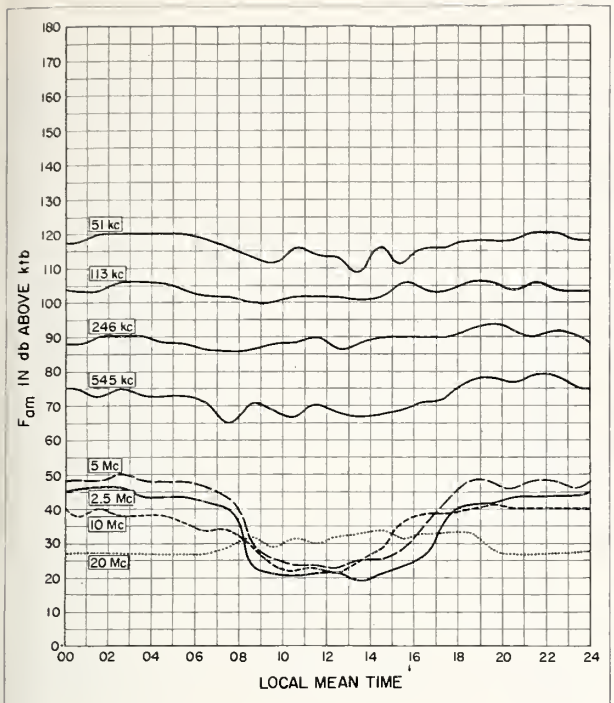
	Local Mean Time																					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
51 kc																								
F_{am}	118	120	120	120	120	120	118	116	114	112	116	*114	*113	*109	*116	*112	116	116	118	118	118	120	120	118
D_u	8	8	10	10	10	10	6	8	10	12	6						6	6	8	12	10	8	10	10
D_ℓ	2	2	2	2	2	4	2	6	4	4	8						10	6	8	6	4	6	4	2
V_{dm}																								
L_{dm}																								
113 kc																								
F_{am}	104	104	106	106	106	104	102	102	100	100	102	*102	*102	*101	*102	*106	104	104	106	106	104	106	104	104
D_u	10	10	6	6	6	8	6	4	6	8	4						4	8	8	10	8	8	10	8
D_ℓ	4	2	6	6	8	6	4	8	4	4	4						8	6	6	8	4	6	4	4
V_{dm}																								
L_{dm}																								
246 kc																								
F_{am}	88	90	90	90	88	88	86	86	86	*88	88	*90	*86	*88	*90	90	90	90	92	94	92	90	92	90
D_u	10	10	8	8	12	12	10	10	10		8					6	6	6	6	4	8	10	8	10
D_ℓ	4	4	4	6	4	4	8	8	8		6					8	8	8	8	10	8	6	8	4
V_{dm}																								
L_{dm}																								
545 kc																								
F_{am}	75	73	75	73	73	73	71	65	71	69	67	*70	*68	*67	*68	69	71	73	77	79	77	79	79	75
D_u	10	8	6	6	6	6	6	10	4	6	6					4	6	14	8	6	10	10	8	10
D_ℓ	6	8	8	6	6	2	4	0	6	4	4					2	6	6	6	8	4	8	2	4
V_{dm}																								
L_{dm}																								
2.5 Mc																								
F_{am}	46	46	46	44	44	44	42	40	24	22	20	22	*22	*19	*22	24	26	38	42	42	44	44	44	44
D_u	12	12	16	16	18	14	8	4	4	4	8	6				12	16	12	14	20	14	14	12	14
D_ℓ	8	6	8	4	6	8	6	8	4	4	2	4				4	4	10	6	2	6	2	4	6
V_{dm}																								
L_{dm}																								
5 Mc																								
F_{am}	48	48	50	48	48	48	46	44	30	26	24	24	*23	*25	*25	28	36	42	48	48	46	48	48	46
D_u	8	8	6	8	10	10	6	4	6	4	6	6				4	8	6	4	6	10	8	8	10
D_ℓ	6	6	6	4	4	4	4	6	8	2	2	0				4	6	6	8	6	4	6	6	6
V_{dm}																								
L_{dm}																								
10 Mc																								
F_{am}	38	40	38	38	38	36	34	34	30	24	22	*23	*22	*25	*28	36	38	38	40	42	40	40	40	40
D_u	2	4	4	6	6	4	8	4	8	4	6					4	8	8	6	4	6	6	6	8
D_ℓ	6	6	6	4	6	6	4	4	6	4	2					8	4	4	4	4	4	4	4	4
V_{dm}																								
L_{dm}																								
20 Mc																								
F_{am}	27	27	27	27	27	27	27	29	31	29	31	*30	*32	*33	*34	31	33	33	33	29	27	27	27	27
D_u	2	2	2	2	2	2	6	4	2	2	2					14	12	18	8	14	6	2	4	6
D_ℓ	2	2	2	2	2	2	0	2	4	2	4					2	2	2	6	2	0	2	2	2
V_{dm}																								
L_{dm}																								

*Average of less than 15 observations.

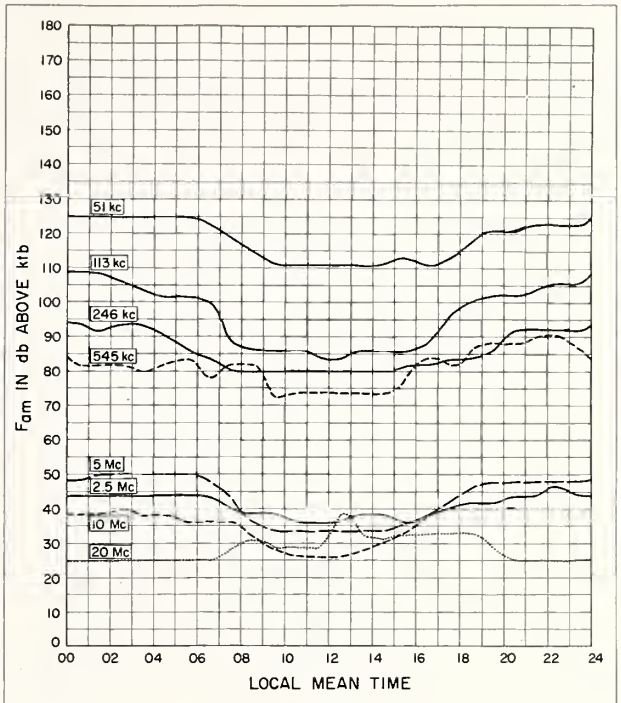
RADIO NOISE DATA

Station Boulder, Colorado Lat. 40.1° N Long. 105.1° W Type Recarder ARN-2 Month Dec. 19 56

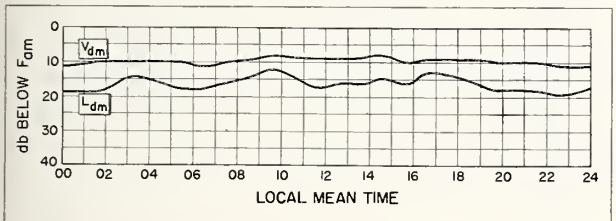
	Local Mean Time																							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	51 kc																							
F_{am}	125	125	125	125	125	125	123	119	115	111	111	111	111	111	111	113	111	113	117	121	121	123	123	123
D_u	6	10	8	8	4	2	6	8	6	14	10	10	14	14	10	12	14	14	12	10	10	8	8	8
D_ℓ	6	4	4	4	4	4	2	2	4	6	8	6	6	6	4	6	6	6	4	6	4	6	4	4
V_{dm}	11	10	10	10	10	10	11	10	10	8	9	9	9	9	8	10	9	9	9	10	10	10	11	11
L_{dm}	18	18	16	15	16	17	17	16	15	12	14	17	16	16	15	16	13	14	15	18	18	18	19	18
	113 kc																							
F_{am}	108	108	106	104	102	102	100	88	86	86	86	84	84	86	86	86	88	96	100	102	102	104	106	106
D_u	10	12	14	10	8	12	6	14	16	18	18	14	18	24	20	22	18	18	16	12	16	14	12	10
D_ℓ	6	10	8	4	6	6	8	4	4	4	4	2	2	4	4	4	6	8	6	6	6	4	6	6
V_{dm}	10	10	9	11	9	10	10	6	3	3	4	4	4	4	4	6	8	8	8	10	10	10	10	10
L_{dm}	16	17	16	17	15	15	14	9	6	8	6	8	9	8	11	9	12	13	13	17	18	15	16	18
	246 kc																							
F_{am}	94	92	94	94	90	86	84	80	80	80	80	80	80	80	80	82	82	84	84	86	92	92	92	92
D_u	6	10	8	6	6	12	2	4	4	4	4	4	6	4	4	6	12	12	16	14	12	10	10	10
D_ℓ	8	8	10	10	8	6	6	2	4	4	4	4	4	4	4	6	6	6	6	6	10	6	8	6
V_{dm}	6	7	5	6	4	4	4	3	3	3	4	3	3	4	3	3	4	5	5	7	7	6	6	5
L_{dm}	10	10	10	10	7	8	7	5	6	5	7	7	5	7	7	6	6	8	10	11	11	10	10	10
	545 kc																							
F_{am}	82	82	82	80	82	84	78	82	82	72	74	74	74	74	74	78	84	82	86	88	88	90	90	86
D_u	8	8	4	8	4	4	8	8	8	10	6	4	2	8	4	4	2	4	4	6	4	6	4	6
D_ℓ	4	6	8	6	6	8	6	6	8	4	4	6	2	6	4	6	8	6	2	8	4	6	4	8
V_{dm}	5	5	5	4	4	4	4	6	5	3	3	2	3	2	2	2	6	3	3	3	4	3	3	4
L_{dm}	8	10	9	7	7	6	7	10	7	6	5	4	7	6	5	3	8	6	6	6	7	6	7	8
	2.5 Mc																							
F_{am}	44	44	44	44	44	44	44	40	38	38	36	36	36	38	38	36	38	40	42	42	44	44	46	44
D_u	8	6	6	6	6	8	6	2	4	2	4	4	4	2	2	2	6	6	6	6	6	4	4	6
D_ℓ	4	2	2	2	4	4	4	2	4	4	2	2	0	2	2	0	2	2	4	2	4	2	6	4
V_{dm}																								
L_{dm}																								
	5 Mc																							
F_{am}	48	50	50	50	50	50	48	44	36	34	34	34	34	34	34	36	38	42	46	48	48	48	48	48
D_u	4	2	4	2	2	4	4	4	2	4	2	4	2	2	4	2	6	8	6	4	6	4	6	6
D_ℓ	4	4	4	4	6	4	6	6	4	2	6	4	2	2	2	4	2	2	4	4	6	6	2	4
V_{dm}																								
L_{dm}																								
	10 Mc																							
F_{am}	38	38	40	38	38	36	36	36	32	28	26	26	26	28	30	34	38	40	40	40	40	40	40	40
D_u	6	10	2	6	6	4	4	4	2	2	2	2	2	2	2	4	8	4	4	6	4	4	4	4
D_ℓ	2	4	4	6	4	4	4	2	2	2	2	2	2	2	4	4	2	4	4	4	2	2	4	4
V_{dm}																								
L_{dm}																								
	20 Mc																							
F_{am}	25	25	25	25	25	25	25	29	31	29	29	29	39	33	31	33	33	33	33	29	25	25	25	25
D_u	4	4	4	4	4	4	4	2	0	2	0	4	16	28	14	14	14	14	26	10	4	4	4	4
D_ℓ	0	0	0	0	0	0	0	2	2	2	2	2	6	4	2	4	2	4	6	4	0	0	0	0
V_{dm}																								
L_{dm}																								



BILL, WYOMING DECEMBER 1956



BOULDER, COLORADO DECEMBER 1956



51 kc

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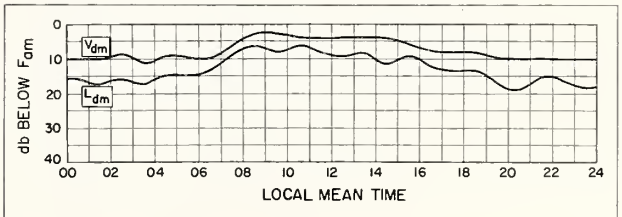
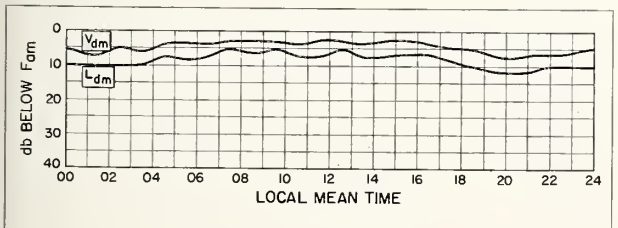


113 kc

BOULDER, COLORADO DECEMBER 1956



246 kc

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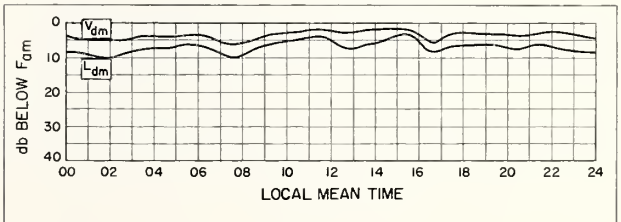


545 kc

BOULDER, COLORADO DECEMBER 1956

Table 1

Washington, D. C. (38.7°N, 77.1°W) February 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.0	270					2.80
01		5.6	270					2.80
02		5.5	270					2.85
03		5.5	270					2.80
04		5.2	270					2.80
05		5.2	260					2.85
06		4.8	260				(2.6)	2.90
07		6.4	240		---	1.80		3.10
08	---	9.2	235		116	2.45		3.20
09	(240)	11.3	230		115	3.00		3.15
10	240	12.2	230	---	112	3.30		3.10
11	250	12.8	230		115	3.50		3.00
12	250	12.9	225		115	3.60		2.95
13	250	12.6	230		115	3.60		2.90
14	245	12.6	230		115	3.45		2.90
15	250	12.4	235		113	3.20		2.90
16	---	12.0	235		115	2.80		2.90
17		11.9	240		119	2.20		2.95
18		11.4	230					3.00
19		9.8	225					2.90
20		8.6	235				(2.4)	2.90
21		7.6	240					2.90
22		6.8	250				(2.8)	2.90
23		6.4	260					2.80

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 2

Graz, Austria (47.1°N, 15.5°E) January 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	335	4.3						
01	305	4.3						
02	320	4.2						
03	305	4.3						
04	300	4.1						
05	280	3.8						
06	(300)	3.6						
07	280	4.6						
08	210	8.0						
09	210	11.0						
10	220	D				(3.1)		
11	220	0				(3.5)		
12	230	D				(3.5)	3.6	
13	230	0				(3.5)	3.6	
14	235	D						
15	230	0						
16	210	11.3						
17	210	8.9						
18	240	7.8						
19	240	6.8						
20	250	5.5						
21	290	4.2						
22	300	4.1						
23	300	4.0						

Time: 15.0°E.
Sweep: 2.5 Mc to 11.5 Mc in 2 minutes.

Table 3

Fairbanks, Alaska (64.9°N, 147.8°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(4.8)					5.1	(2.85)
01		(4.5)					6.0	(2.70)
02		(4.8)					5.9	(2.70)
03		(5.0)					5.4	(2.70)
04		(4.7)					5.2	(2.70)
05		(4.7)					5.0	(2.75)
06		(4.7)					4.3	(2.80)
07		(4.8)					4.0	(2.80)
08		(5.0)					3.0	(2.80)
09		(6.1)						(3.00)
10		8.2			111	---		3.10
11		10.0			111	---		3.10
12		11.5			107	2.1		3.05
13		12.5			109	---		3.05
14		12.5			111	---		3.05
15		11.5						3.00
16		10.6						3.05
17		9.0						3.10
18		(7.2)						3.20
19		(5.0)						(3.10)
20		(3.9)						(3.00)
21		(3.9)					3.4	(2.90)
22		(4.2)					4.2	(3.00)
23		(4.6)					5.0	(3.00)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 4

Anchorage, Alaska (61.2°N, 149.9°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		3.1						2.55
01		3.1					2.6	2.55
02		3.1					3.6	2.45
03		3.2					4.3	2.50
04		3.3					3.5	2.45
05		(3.8)					3.2	2.50
06		(3.8)					1.8	(2.55)
07		3.9						2.65
08		4.5						2.70
09		6.5			115	(1.8)	1.8	2.95
10		9.1			(121)	1.9		3.00
11		10.8			(125)	2.1		3.00
12		12.3			127	2.2		3.00
13		13.0			129	2.2		2.95
14		13.0			(131)	2.0		3.00
15		12.1			---	---		2.95
16		11.2						2.90
17		9.6						3.00
18		8.1						2.95
19		5.8						3.00
20		3.8						2.85
21		(3.3)						2.90
22		(3.1)						2.80
23		2.9						2.65

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 5

Narsarssuak, Greenland (61.2°N, 45.4°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		---					4.4	----
01		---					4.3	----
02		---					4.5	----
03		---					4.4	----
04		---					4.6	----
05		---					4.4	----
06		(4.6)					4.0	(2.90)
07		(4.9)					2.3	(2.80)
08		(5.0)						(2.85)
09		(7.2)			---	---		(3.05)
10		(10.1)			---	---		(3.05)
11		12.5			129	2.3		3.00
12		13.6			129	2.4		3.05
13		13.7			132	2.3		3.00
14		(12.8)			141	2.1		(3.05)
15		(11.3)			---	---	1.7	(3.10)
16		---					2.2	----
17		---					3.6	----
18		---					3.8	----
19		---					4.0	----
20		---					4.0	
21		---					4.9	----
22		---					4.7	----
23							4.2	

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 6

Adak, Alaska (51.9°N, 176.6°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	(2.8)						(2.55)
01	330	(2.8)						(2.55)
02	330	(2.9)						(2.55)
03	<330	(2.8)						(2.55)
04	<320	(2.9)						(2.55)
05	300	2.8						2.60
06	280	2.8					1.7	2.75
07	250	(4.0)						(2.55)
08	230	7.4	---	---	115	(2.1)		3.10
09	230	10.5	---	---	121	(2.3)	2.4	3.15
10	230	12.1	---	---	121	(2.7)	2.8	3.10
11	230	13.3	220	---	121	3.0		3.05
12	230	13.6	---	---	121	(3.0)		3.00
13	230	13.0	---	---	119	(2.9)		2.95
14	230	12.5	---	---	121	(2.5)	2.6	2.95
15	230	11.5	---	---	129	(2.1)	2.4	2.95
16	<230	10.0	---	---	---	---	2.0	3.00
17	220	8.1						2.95
18	220	6.0						3.05
19	<240	4.4						3.15
20	240	2.8						3.05
21	290	2.6						2.70
22	320	2.6						2.55
23	<330	(2.7)						(2.60)

Time: 180.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 7

San Francisco, California (37.4°N, 122.2°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	3.3						2.60
01	---	3.4					(3.0)	2.55
02	---	3.4					(3.0)	2.50
03	---	3.4					(3.4)	2.55
04	---	3.4					(2.8)	2.65
05	---	3.4					3.2	2.60
06	---	3.4					(3.2)	2.70
07	260	5.3					(3.4)	2.80
08	230	(9.1)			123	>2.5		(3.20)
09	230	11.5	---	---	115	>2.9		(3.10)
10	220	(12.5)	225	---	115	>3.4		(3.00)
11	230	>13.0	220	---	113	>3.6		(2.90)
12	230	(13.1)	225	---	115	>3.6		(2.80)
13	300	(12.6)	230	---	115	>3.6		(2.70)
14	250	(12.5)	230	---	115	>3.4	3.7	(2.70)
15	240	>12.4	230	---	115	3.1	3.8	(2.70)
16	230	>12.0	240	---	---	---	3.7	(2.80)
17	230	>11.0	---	---			3.7	2.85
18	230	9.7					(3.6)	2.90
19	230	>8.0					(3.3)	3.00
20	230	6.2					(3.6)	3.05
21	230	4.0					(4.0)	3.10
22	---	3.5					(3.5)	2.80
23	---	3.3						2.60

Time: 120.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 8

White Sands, New Mexico (32.3°N, 106.5°W) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(270)	3.8					3.0	2.70
01	(270)	3.9					3.0	2.65
02	<280	3.6					2.8	2.65
03	(280)	3.8					3.4	2.65
04	(280)	3.6					2.5	2.65
05	(280)	3.6					3.0	2.65
06	(260)	3.6					3.6	2.75
07	250	6.5			---	---	3.0	3.00
08	230	10.3	230	---	115	(2.6)	2.6	3.25
09	240	12.0	230	---	111	(3.2)	3.2	3.15
10	250	12.8	230	---	109	(3.5)	3.7	3.05
11	(280)	13.0	225	---	109	(3.7)	3.9	2.90
12	(310)	13.0	230	---	109	(3.8)	4.2	2.80
13	(290)	12.6	230	---	111	(3.7)	4.0	2.70
14	(300)	12.4	230	---	110	(3.6)	4.4	2.70
15	(290)	12.0	235	---	111	3.2	3.8	2.70
16	240	11.7	230	---	113	2.7	3.3	2.75
17	230	11.0	---	---	---	---	3.1	2.85
18	230	9.8					3.4	2.85
19	230	8.4					3.2	2.90
20	230	7.2					3.2	3.00
21	230	5.3					3.8	3.05
22	<250	4.2					3.2	2.90
23	(260)	3.9					3.5	2.75

Time: 105.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 9

Okinawa I. (26.3°N, 127.8°E) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	8.0						2.70
01	260	7.4						2.85
02	250	7.0						2.90
03	240	6.3						2.90
04	240	5.2						2.90
05	250	4.7						2.80
06	<280	4.5						2.65
07	300	6.8						2.80
08	250	11.4	---	---	119	(2.5)	3.5	3.05
09	240	13.8	250	---	111	(3.2)	4.5	3.10
10	---	14.3	240	---	111	(3.5)	4.5	3.00
11	---	13.8	230	---	111	(3.8)	5.0	2.80
12	---	14.3	230	---	111	(3.8)	4.9	2.65
13	(350)	15.0	230	---	111	(3.8)	5.0	2.60
14	360	15.3	230	---	(111)	(3.7)	4.4	2.60
15	---	15.8	235	---	111	(3.4)	4.8	2.60
16	---	15.6	245	---	115	(3.1)	3.9	2.65
17	250	15.0	---	---	126	(2.5)	3.5	2.70
18	240	14.5					3.0	2.75
19	240	13.2					2.7	2.75
20	250	13.6					2.1	2.75
21	240	13.4						2.85
22	230	12.5						2.90
23	230	10.0						2.80

Time: 135.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 10

Baguio, P. I. (16.4°N, 120.6°E) December 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	11.0						2.95
01	220	10.4						3.00
02	230	9.1						3.05
03	220	7.5						3.05
04	230	6.2						2.95
05	240	5.7						2.90
06	270	6.1						2.80
07	270	9.9			119	2.4		2.85
08	250	13.1			111	3.1		2.80
09	240	14.6	---	---	111	(3.6)		2.80
10	---	14.8	230	---	111	(3.9)		2.55
11	---	14.5	220	---	109	(4.0)		2.40
12	---	13.9	215	---	109	4.0	4.0	2.30
13	---	13.5	220	---	109	(3.9)	4.2	2.15
14	---	13.0	230	---	109	3.8	3.9	2.20
15	---	12.9	235	---	111	3.5	3.8	2.20
16	250	13.2	250	---	117	3.0	4.7	2.30
17	270	13.2			127	2.2	4.0	2.40
18	300	13.2					3.6	2.40
19	320	12.7					2.3	2.40
20	310	12.8					3.6	2.50
21	270	13.0					3.7	2.70
22	250	12.6					3.6	2.80
23	230	11.5					2.1	2.85

Time: 120.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 11

Anchorage, Alaska (61.2°N, 149.9°W) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(3.1)					3.0	(2.60)
01		(3.3)					3.8	(2.45)
02		3.9					4.0	2.35
03		3.2					4.1	2.45
04		3.8					3.4	2.45
05		3.6					3.3	2.50
06		(3.9)					1.8	(2.40)
07		(4.6)						(2.60)
08		5.5			---	---		2.80
09		7.0		---	---	---		2.90
10		8.9		---	---	2.5		2.95
11		10.8		---	129	2.8		3.00
12		11.8		---	127	2.7		2.90
13		12.6			---	2.7		2.90
14		12.6			---	2.3		2.90
15		12.5			---	---		2.90
16		11.7						2.90
17		10.0						2.90
18		8.2						2.95
19		6.3						2.95
20		4.4						(2.90)
21		4.2						(2.95)
22		3.8						(2.85)
23		(3.4)					3.0	(2.70)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 12

Narsarssuak, Greenland (61.2°N, 45.4°W) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		---					4.5	----
01		---					5.0	----
02		---					3.8	----
03		---					3.9	----
04		---					3.7	----
05		(5.2)					4.0	----
06		(4.6)					3.4	----
07		(5.5)						----
08		(7.1)			---	---		(3.05)
09		(9.1)			119	2.5		(3.05)
10		11.0			113	2.6		3.00
11		12.4		---	117	2.7		3.00
12		13.2			121	2.8		2.90
13		13.0			123	2.7		2.95
14		(12.5)			126	2.5		(2.90)
15		(11.2)			129	2.3		(3.10)
16		---			---	---	2.2	----
17		---					3.7	----
18		---					4.2	----
19		---					4.6	
20		---					4.7	
21		---					5.4	----
22		---					4.5	
23		---					3.8	----

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 13

San Francisco, California (37.4°N, 122.2°W) November 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<300	4.1						2.60
01	300	>4.0						2.50
02	300	(4.0)						(2.60)
03	300	4.0						2.60
04	<300	4.0						2.50
05	---	3.8						2.60
06	<300	4.0					(3.6)	2.60
07	250	>6.8			---	---	(3.8)	2.85
08	230	>10.5			---	---	2.6	(3.00)
09	230	(12.2)	---	---	121	---		(2.95)
10	230	>12.9	230	---	(119)	---		(2.85)
11	(230)	>13.5	230	---	(121)	---	3.5	(2.80)
12	---	(13.6)	230	---	(119)	>3.6		(2.80)
13	---	(13.4)	230	---	119	>3.5		(2.75)
14	---	(13.4)	230	---	(119)	3.4		(2.70)
15	240	13.0	240	---	(119)	>3.0		(2.75)
16	240	(12.8)	230	---			(2.8)	(2.70)
17	230	12.2	---	---			(3.6)	2.75
18	240	>11.0					(3.7)	2.80
19	230	9.4					(3.4)	2.90
20	230	7.6					(3.5)	3.00
21	<240	5.8					(3.0)	2.90
22	<260	5.0					(3.2)	2.80
23	<280	(4.3)						(2.70)

Time: 120.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 14

Anchorage, Alaska (61.2°N, 149.9°W) October 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		3.2						2.50
01		3.3						2.50
02		(3.4)						2.50
03		(3.1)						2.50
04		(3.8)						(2.50)
05		3.6						2.50
06		(4.0)						2.70
07		5.8			---	---		2.90
08		7.0		---	---	---		3.00
09		7.8		---	120	---		3.00
10		8.8		---	---	---		3.00
11		9.6		---	119	---		2.90
12		9.8		---	119	---		2.85
13		10.6		---	119	---		2.85
14		10.8		---	119	---		2.80
15		10.8			119	---		2.90
16		10.6			---	---		2.90
17		10.0						2.90
18		9.0						2.95
19		7.4						2.95
20		6.4						2.95
21		4.7						3.00
22		4.2						2.85
23		(3.4)						2.75

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 15

Resolute Bay, Canada (74.7°N, 94.9°W) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		6.0			140	1.4	1.4	---
01		5.5			130	1.3		---
02		5.4			130	1.2		---
03		5.2			120	1.3	1.3	---
04		5.3			120	1.6		
05		5.4			120	1.7	3.4	
06		5.9		---	120	1.9		(2.95)
07		6.0		3.8	115	2.3		(2.8)
08		6.2		3.9	120	2.5		(2.7)
09		6.6		4.0	110	2.7		(2.8)
10		6.6		4.1	115	2.9		---
11		6.6		4.3	110	2.8		(2.7)
12		6.8		4.3	110	3.0		(2.45)
13		6.6		4.4	110	3.0		---
14		6.7		4.2	110	2.9		---
15		6.8		4.2	115	2.8		(2.45)
16		6.4		4.0	120	2.7		---
17		6.7		3.8	120	2.4		(2.7)
18		7.0		---	130	2.0		2.6
19		6.5		---	140	1.8		(2.6)
20		6.2			135	1.7		---
21		6.0			135	1.5	<1.6	---
22		6.0			140	1.3	<1.3	---
23		6.0			140	1.4		---

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 16

Tromso, Norway (69.7°N, 19.0°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	(5.80)					3.2	(2.55)
01	(345)	(5.30)					3.2	(2.50)
02	(330)	(5.10)					>3.2	(2.45)
03	(310)	(5.00)					3.2	(2.55)
04	300	4.90					3.2	2.55
05	280	5.35	---	---	---	----	1.1	2.70
06	260	6.30	---	---	110	1.90		2.90
07	255	6.75	255	---	125	2.45		2.80
08	(255)	7.30	250	---	110	2.60		2.70
09	(280)	8.00	245	---	105	2.90		2.70
10	(270)	8.30	245	---	105	3.00		2.70
11	(270)	8.50	245	---	105	3.10		2.70
12	(290)	8.50	245	---	105	3.10		2.70
13	(250)	8.10	245	---	105	3.00		2.70
14	(250)	7.90	250	---	105	2.90		2.75
15	(250)	7.90	250	---	105	2.80		2.85
16	250	7.50	250	---	110	2.50		2.85
17	250	6.70	---	---	140	2.25	2.4	2.90
18	255	6.60			105	2.00	2.5	2.70
19	255	6.70			---	----	2.5	2.75
20	270	7.10			---	----	2.8	2.70
21	275	(5.50)					3.2	(2.70)
22	(295)	(5.40)					3.0	(2.55)
23	(345)	(5.85)					2.9	(2.45)

Time: 15.0°E.
Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 17

Kiruna, Sweden (67.8°N, 20.3°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	(5.0)					4.0	2.5
01	340	5.0					4.0	2.55
02	340	(5.0)					4.0	2.6
03	325	4.5					3.5	2.6
04	315	4.3			---	E	3.0	2.6
05	280	5.2	---	---	---	E	3.8	2.7
06	255	6.1	260	---	105	2.0	3.6	2.8
07	255	6.4	250	---	---	2.3	4.3	2.8
08	260	6.8	245	4.2	---	2.5	3.6	2.7
09	(275)	7.8	240	4.6	105	2.9	4.0	2.8
10	---	8.3	235	4.8	105	3.0	4.6	2.7
11	---	8.8	230	4.9	105	3.0	4.2	2.7
12	---	8.6	230	5.0	105	3.0	4.3	2.7
13	(315)	8.2	235	4.7	105	3.0	<4.2	2.7
14	(240)	8.0	240	---	110	2.9	3.8	2.8
15	250	8.0	240	---	110	2.8	<4.2	2.8
16	250	7.9	250	---	---	2.4	4.2	2.9
17	260	7.0	260	---	---	2.0	3.4	2.85
18	270	6.6	250	---	---	1.3	3.5	2.8
19	255	6.0			---	E	3.4	2.8
20	260	6.0					3.8	2.8
21	275	5.5					4.0	2.65
22	310	5.8					3.9	2.6
23	320	5.0					4.3	2.5

Time: 15.0°E.
Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 18

Baker Lake, Canada (64.3°N, 96.0°W) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		6.0			---	---	5.0	---
01		5.8			---	---	5.0	---
02		5.3			---	---	5.3	---
03		4.4			---	1.2	4.6	---
04		4.3			---	1.3	4.6	---
05		4.6			---	1.6	4.1	---
06		5.0			115	2.0	4.3	(2.9)
07		5.4		---	110	2.3		(2.9)
08		5.3		4.0	110	2.5		(2.75)
09		5.4		4.4	110	3.0		2.7
10		6.2		4.7	105	3.3		2.65
11		6.5		4.8	105	3.3		2.6
12		7.0		4.8	105	3.4		2.7
13		7.9		4.6	105	3.3		2.7
14		8.0		4.7	105	3.2		2.6
15		7.2		4.6	105	3.1		2.7
16		7.2		(4.2)	110	2.9		(2.7)
17		7.0		4.1	110	2.6		2.8
18		7.0			115	2.3	4.6	(2.75)
19		6.5			110	2.0	6.6	---
20		6.5			120	1.9	6.5	(2.8)
21		6.0			---	---	6.9	(2.65)
22		6.0			---	---	6.5	(2.7)
23		6.0			---	---	6.8	---

Time: 90.0°W.
Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 19

Lindau/Harz, Germany (51.6°N, 10.1°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.70					2.8	2.50
01	300	5.50					3.0	2.50
02	300	5.10					2.5	2.50
03	300	4.85			---	E	2.8	2.45
04	300	4.65			---	E	2.6	2.50
05	290	4.35			---	E	3.0	2.60
06	260	5.20	---	---	---	E	3.1	2.85
07	240	6.70	250	---	120	2.35	3.4	3.00
08	250	7.85	240	---	110	2.90	3.5	2.95
09	270	8.55	230	---	110	3.20	3.6	2.85
10	280	9.05	230	4.70	110	3.40	4.5	2.80
11	300	9.75	230	5.40	105	3.50	4.4	2.75
12	320	9.90	225	5.30	110	3.50	4.9	2.70
13	335	10.25	230	---	110	3.45	4.3	2.70
14	330	10.10	240	---	110	3.50	4.0	2.70
15	(315)	9.95	240	---	110	3.35	3.9	2.75
16	290	9.75	240	---	110	3.10	3.8	2.75
17	250	9.85	250	---	110	2.70	3.5	2.80
18	260	9.95	---	---	---	2.10	3.6	2.80
19	250	9.45			---	E	3.8	2.85
20	250	8.20			---	E	3.6	2.80
21	250	7.00			---	E	3.4	2.75
22	270	6.50					3.1	2.65
23	300	5.95					3.0	2.55

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 4 minutes.

Table 20

Winnipeg, Canada (49.9°N, 97.4°W) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		4.5					<1.6	2.70
01		4.5					<1.5	2.70
02		4.2					<1.5	(2.70)
03		4.0					<1.7	(2.70)
04		4.0					<2.1	(2.70)
05		3.9					<1.6	(2.70)
06		4.5			---	1.6		2.80
07		5.7			130	2.2		3.00
08		6.5			120	2.9		3.00
09		7.1		---	110	3.2		2.90
10		7.8		4.8	110	3.4		2.80
11		8.0		5.0	110	3.7		2.80
12		8.6		5.0	110	3.8		2.70
13		8.8		5.0	110	3.8		2.70
14		8.8		5.0	110	3.7		2.70
15		9.0		4.8	110	3.4		2.70
16		9.3		---	110	3.0		2.80
17		9.0		---	120	2.8		2.80
18		8.8			130	2.1		2.90
19		8.4			---	1.6		2.90
20		7.4			---	---	<1.5	2.80
21		6.8					<1.5	2.80
22		5.7					<1.5	2.80
23		5.1					<1.6	2.70

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 21

Graz, Austria (47.1°N, 15.5°E) 5september 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	6.6						
01	330	6.0						
02	330	5.7						
03	330	5.3						
04	340	5.0						
05	300	5.0						
06	255	6.2						
07	230	7.0	250	(4.0)				
08	230	7.6	230	(5.2)				
09	250	7.8	230	(5.2)		(3.7)	3.8	
10	250	8.7	220	(5.4)		(3.8)	4.0	
11	260	9.0	220	(5.3)		(3.9)	4.2	
12	280	10.3	220	(5.4)			4.0	
13	280	10.2	220	(5.3)			3.8	
14	275	10.3	220	(5.2)				
15	240	9.9	230					
16	230	9.4						
17	245	(8.8)						
18	250	(8.6)					4.1	
19	250	(8.6)					4.3	
20	250	7.8						
21	270	6.9						
22	300	6.6						
23	300	6.2						

Time: 15.0°E.
Sweep: 2.5 Mc to 11.0 Mc in 2 minutes.

Table 22

Schwarzenburg, Switzerland (46.8°N, 7.3°E) 5september 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.0						2.8
01	300	5.9						2.8
02	300	5.7						2.8
03	300	4.9						2.8
04	300	4.8						2.8
05	290	4.5						2.8
06	280	5.0	270	3.2	100	2.2		3.3
07	260	7.0	240	4.0	100	2.4		3.4
08	260	8.0	230	4.8	100	2.8		3.4
09	260	8.6	220	5.1	100	3.2		3.3
10	260	9.0	220	5.3	100	3.4		3.25
11	260	9.0	220	5.6	100	3.5	3.9	3.2
12	270	9.4	210	6.1	100	3.6		3.1
13	290	9.5	220	6.0	100	3.6		3.2
14	280	9.4	220	6.0	100	3.4		3.0
15	270	9.2	220	5.5	100	3.3		3.1
16	270	9.2	230	5.3	100	3.1		3.2
17	270	8.5	240	5.2	100	2.8		3.2
18	270	8.7	260	4.8	100	2.4	2.8	(3.2)
19	250	8.5	---	---	---	---	3.5	(3.3)
20	240	7.8					3.2	3.2
21	240	7.0					2.6	3.1
22	260	6.3						3.0
23	280	6.2						2.9

Time: 15.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 23

Ottawa, Canada (45.4°N, 75.9°W) 5september 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.4					<1.5	2.6
01		5.1					<1.6	2.6
02		5.0					<1.6	2.6
03		4.5					<1.6	2.6
04		4.2					<1.6	2.6
05		4.0					<1.6	2.7
06		5.3			125	2.0		2.9
07		7.0		---	110	2.7		2.9
08		7.8		4.8	110	3.2		2.9
09		8.8		5.2	110	3.5		2.8
10		9.1		5.2	105	3.8		2.8
11		9.5		5.3	105	3.9		2.8
12		9.8		5.3	110	3.9		2.7
13		10.0		5.3	105	3.9		2.7
14		10.2		5.3	110	3.8		2.7
15		10.0		5.1	110	3.5		2.7
16		9.8		4.9	110	3.2		2.7
17		9.6		---	115	2.8		2.7
18		9.2			125	2.0		2.8
19		8.9			---	---	<1.6	2.8
20		8.0			---	---	<1.5	2.8
21		6.8					<1.5	2.75
22		6.2					<1.5	2.7
23		5.9					<1.5	2.6

Time: 75.0°W.
Sweep: 1.0 Mc to 15.0 Mc in 15 seconds.

Table 24

Wakkanai, Japan (45.4°N, 141.7°E) 5september 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.8					1.8	
01	290	6.5					2.2	
02	300	6.1					2.2	
03	280	6.0					2.2	
04	280	5.8					2.2	
05	270	6.1						
06	230	7.9						
07	240	9.2						
08	250	10.6						
09	260	10.8						
10	250	11.2						
11	280	11.6						
12	300	11.2						
13	320	11.2						
14	300	11.0						
15	270	10.8						
16	250	10.5						
17	240	10.5						
18	230	10.0					3.0	
19	240	8.8					3.2	
20	250	8.3					2.4	
21	260	7.5					2.8	
22	260	7.0						
23	280	7.0						

Time: 135.0°E.
Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 25

Monte Capellino, Italy (44.6°N, 9.0°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		6.5						
01		6.2						
02		5.8						
03		5.4						
04		5.1						
05		5.2						
06		6.6				2.0		
07		8.4				2.7		
08		9.4				3.2		
09		10.8				3.4		
10		11.0				3.6		
11		10.8				3.6		
12		10.8				3.7		
13		11.4				3.7		
14		11.2				3.6		
15		11.2				3.5		
16		10.8				3.1		
17		11.0				2.7		
18		10.2				1.7		
19		9.3						
20		8.8						
21		7.1						
22		6.6						
23		6.2						

Time: Local.

Table 26

Akita, Japan (39.7°N, 140.1°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	7.1					2.5	
01	300	6.9					2.7	
02	290	6.6					3.0	
03	290	6.5					2.7	
04	290	6.3					3.1	
05	300	6.5					2.5	
06	250	8.6					3.1	
07	240	10.2					3.4	
08	240	11.6						
09	250	11.8						
10	240	11.9						
11	250	12.0						
12	250	12.0						
13	250	12.0						
14	250	11.9						
15	260	11.6						
16	250	11.4						
17	260	11.2					3.5	
18	250	10.5					3.2	
19	250	9.2					3.1	
20	260	8.2					3.0	
21	280	7.6					2.9	
22	290	7.5					3.0	
23	290	7.2					2.6	

Time: 135.0°E.
Sweep: 0.85 Mc to 22.0 Mc in 2 minutes.

Table 27

Tokyo, Japan (35.7°N, 139.5°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.5					2.4	2.7
01	300	7.3					1.9	2.6
02	300	7.0					2.1	2.5
03	290	6.7					2.0	2.6
04	280	6.4					2.0	2.6
05	290	6.5						2.7
06	250	9.0	---	---	130	2.1	2.8	3.0
07	240	11.0	240	---	120	2.9	3.6	3.1
08	240	10.9	240	---	120	3.3	3.7	3.0
09	250	11.4	230	5.0	120	3.6	3.7	2.9
10	250	>11.0	230	5.4	120	3.8		2.8
11	260	12.0	220	5.7	110	3.7		2.7
12	260	11.8	230	5.5	110	3.8		2.7
13	260	12.5	240	5.8	110	3.8		2.7
14	270	11.5	240	6.0	110	3.7		2.7
15	270	11.6	250	---	110	3.4	3.6	2.7
16	270	11.3	250	---	120	3.0	3.8	2.8
17	260	11.6	---	---	130	2.2	3.6	2.9
18	260	10.8					3.5	2.9
19	250	9.2					2.9	2.9
20	260	8.4					2.4	2.6
21	290	8.0					2.3	2.7
22	290	8.0					1.8	2.7
23	300	7.6					2.4	2.7

Time: 135.0°E.
Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Table 28

Yamagawa, Japan (31.2°N, 130.6°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	9.2					2.3	
01	260	8.7					>2.2	
02	280	8.0					>2.2	
03	260	7.4					>2.2	
04	250	6.8						
05	260	6.4						
06	270	7.2						
07	240	10.5						
08	240	11.6						
09	230	11.8					4.6	
10	240	12.2					4.9	
11	240	12.8						
12	240	13.5					4.5	
13	240	13.5					4.9	
14	250	13.5						
15	250	14.0						
16	250	13.4						
17	250	13.4					3.6	
18	250	13.0					3.6	
19	240	11.6					3.1	
20	240	9.9					3.3	
21	260	9.2					3.0	
22	270	9.4					2.3	
23	270	9.8					2.3	

Time: 135.0°E.
Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 29

Leopoldville, Belgian Congo (4.4°S, 15.2°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	210	11.2						2.6
01	235	10.1						2.6
02	235	9.0					1.4	2.7
03	230	7.5					2.0	2.9
04	220	5.8					1.8	3.0
05	240	6.9			---	---	2.8	2.9
06	240	9.8	235	---	120	2.9	3.5	3.0
07	255	10.6	230	---	110	3.5	4.0	2.7
08	275	11.6	220	---	110	3.8	4.5	2.5
09	300	12.5	215	---	110	4.0	4.9	2.4
10	340	13.2	210	---	105	4.1	4.4	2.3
11	410	>13.4	240	---	105	4.1		2.3
12	420	14.0	240	5.2	105	4.1		<2.3
13	425	14.3	240	---	105	4.0		2.2
14	425	>14.4	240	---	105	3.7	3.8	2.2
15	405	>14.0	240	---	110	3.2	4.0	2.3
16	360	>14.0	260	---	115	2.6	3.5	2.3
17	300	>13.4	---	---			3.0	<2.5
18	330	>13.5					3.0	<2.6
19	270	----						<2.8
20	220	>14.0						<3.0
21	210	>14.0						<3.0
22	210	>14.0						<2.8
23	215	>13.3						2.8

Time: 0.0°.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 30

Talara, Peru (4.6°S, 81.3°W) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	11.6					2.7	3.00
01	230	10.3					(3.0)	2.95
02	240	9.2					(2.2)	3.05
03	230	7.6					2.4	3.15
04	230	6.2					2.7	3.10
05	240	4.8					2.5	3.10
06	270	4.6					3.3	2.70
07	260	8.7			127	2.5		3.00
08	240	11.2	240	---	119	3.2		2.80
09	---	12.5	230	---	117	3.6		2.55
10	---	13.0	220	---	115	4.0	4.9	2.35
11	---	13.0	210	---	113	4.2	4.8	2.30
12	---	13.0	210	---	113	4.2	4.2	2.15
13	---	12.8	205	---	111	4.2	4.8	2.20
14	---	12.4	210	---	111	4.1	4.6	2.15
15	---	12.5	215	---	113	3.8	4.2	2.15
16	(230)	11.8	220	---	112	3.4	4.0	2.20
17	250	11.8			119	2.9	3.3	2.20
18	280	11.6						2.20
19	360	10.4					3.2	2.20
20	380	10.4						2.30
21	300	(11.7)					2.0	(2.50)
22	240	(12.2)					2.9	(2.80)
23	220	12.0					3.3	3.00

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 31

Elisabethville, Belgian Congo (11.6°S, 27.5°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	7.0						2.5
01	260	5.9					1.6	2.5
02	260	5.8						2.7
03	240	4.8					1.6	2.8
04	250	6.0	---	---			2.2	2.7
05	240	9.6	240	---	110	2.7	2.8	3.0
06	250	11.0	230	---	110	3.3		2.8
07	255	11.2	220	---	110	3.7		2.7
08	265	11.8	220	---	105	4.0		2.6
09	270	11.9	220	---	105	4.0		2.5
10	335	12.0	225	---	105	4.0		2.4
11	370	12.1	240	6.5	110	4.0		2.4
12	355	12.4	240	6.1	105	3.8		2.4
13	355	12.8	240	5.9	105	3.6	3.8	2.3
14	340	12.8	240	---	110	3.3	3.6	2.4
15	320	13.0	250	---	115	2.7	3.3	2.4
16	270	13.4					2.9	2.5
17	270	13.7					2.8	2.5
18	260	>14.0					2.7	2.6
19	230	>13.5					2.4	2.6
20	220	13.3						2.7
21	230	12.8						2.7
22	220	11.1						2.8
23	215	9.0						2.7

Time: 0.0°.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 32

Rarotonga I. (21.3°S, 159.8°W) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	(8.2)						(2.85)
01	250	8.6						2.95
02	250	8.2						2.75
03	270	7.3						2.7
04	290	7.0						2.7
05	280	6.6						2.7
06	300	7.5			---	E		2.8
07	260	(10.5)	250	4.4	120	2.6		3.1
08	260	13.4	250	5.1	115	3.3		3.1
09	260	13.2	250	5.5	110	3.6		3.0
10	270	13.4	240	5.6	110	3.8		2.9
11	280	13.5	220	5.7	110	3.9		2.8
12	280	13.2	220	5.7	110	4.0		2.7
13	340	13.4	230	6.5	110	4.0		2.7
14	340	13.4	230	6.5	110	3.8		2.6
15	350	13.2	240	6.4	110	3.6	4.6	2.7
16	340	13.0	250	6.0	110	3.2	3.9	2.7
17	300	(11.4)	260	6.0	115	2.7	3.1	---
18	300	(11.8)	---	---			2.6	---
19	300	(12.7)					2.6	---
20	290	(10.4)					2.0	(2.9)
21	280	(10.0)					1.7	---
22	270	(9.6)						(3.0)
23	260	(10.6)						(2.9)

Time: 157.5°W.
Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 33

Johannesburg, Union of S. Africa (26.2°S, 28.1°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	5.7						2.9
01	250	5.2						2.8
02	250	5.0						2.9
03	<250	4.6						2.8
04	250	4.3						2.8
05	260	4.0						2.8
06	260	6.0			---	1.8		3.0
07	230	9.1	---	---	120	2.6		3.3
08	250	10.9	230	---	110	3.2		3.1
09	250	12.0	230	5.0	110	3.6		3.0
10	260	12.4	210	5.1	110	3.9		2.9
11	260	12.6	210	5.2	110	4.0		2.8
12	260	12.4	210	5.3	110	4.0		2.8
13	(250)	12.2	210	5.0	110	4.0		2.7
14	(250)	12.1	220	---	110	3.9		2.7
15	---	12.0	230	---	110	3.6	4.2	2.6
16	(250)	12.0	240	---	110	3.3	4.0	2.7
17	250	11.9	250	---	120	2.7	3.2	2.8
[illegible]	250	11.8			---	1.9		2.85
19	240	11.0						2.9
20	240	10.0						2.9
21	240	9.1						2.9
22	240	8.2						3.0
23	240	6.9						3.0

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 34

Watheroo, W. Australia (30.3°S, 115.9°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	6.7					1.1	2.9
01	250	6.0					1.4	2.8
02	250	6.0					1.6	2.8
03	240	5.4						2.8
04	250	5.4						2.8
05	250	5.2						2.8
06	260	6.0				1.5		3.0
07	230	9.2				2.5		(3.4)
08	240	10.6	220	4.5		3.1		3.3
09	240	11.5	220	5.0		3.5	3.8	3.1
10	250	11.8	210	5.0		3.7	3.8	3.1
11	260	12.0	210	5.4		3.8	3.8	3.0
12	260	12.0	210	5.4		3.9	3.9	2.9
13	260	12.0	210	5.3		3.9	4.0	2.8
14	260	11.8	210	5.0		3.8	4.0	2.8
15	250	11.5	210	4.8		3.6	3.8	2.8
16	250	11.5	220	4.5		3.3	3.8	2.8
17	240	10.8	---	---		2.7	3.2	2.9
18	240	10.7				2.0		2.8
19	230	10.0						2.8
20	240	8.8						2.8
21	240	7.7						2.9
22	240	7.0						2.9
23	250	6.9						2.8

Time: 120.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 45 seconds.

Table 35

Capetown, Union of S. Africa (34.2°S, 18.3°E) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	5.2						2.9
01	270	4.6						2.7
02	280	4.4						2.7
03	270	4.4						2.8
04	270	4.0						2.7
05	280	3.9						2.7
06	270	4.0						2.7
07	240	7.0			140	2.1		3.1
08	240	9.8	240	---	120	2.7		3.2
09	250	10.9	240	---	120	3.2		3.0
10	250	12.0	230	---	110	3.6		2.9
11	250	12.8	230	---	110	3.7		2.8
12	260	13.0	220	---	110	3.8		2.7
13	260	13.0	230	---	110	4.0		2.7
14	260	13.0	240	---	110	3.9		2.6
15	260	12.8	240	---	110	3.7		2.6
16	260	12.7	240	---	110	3.4	3.6	2.6
17	250	12.3	240	3.6	120	3.0	3.2	2.7
18	250	12.1			120	2.3		2.8
19	230	11.4						2.85
20	230	10.2						2.9
21	240	9.2						2.9
22	240	8.0						3.0
23	240	6.3						3.0

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 36

Buenos Aires, Argentina (34.5°S, 58.5°W) September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	10.6						3.0
01	250	9.8						3.0
02	230	9.0						3.0
03	210	9.0						3.2
04	220	7.2						2.9
05	240	6.8						2.9
06	230	7.3						3.0
07	220	9.7	---	---				3.1
08	210	11.3	210	---				3.3
09	220	12.1	200	---				3.1
10	240	13.0	200	---				3.0
11	270	13.4	200	---				3.0
12	280	13.6	200	---	---	---		3.0
13	280	14.0	200	---				3.0
14	290	13.8	200	---				3.0
15	280	14.4	200	---				2.9
16	260	13.8	220	---				3.0
17	230	14.5	200	---				3.0
18	220	13.5						3.1
19	220	13.0						3.0
20	240	13.0						3.1
21	220	13.0						3.1
22	220	11.5						3.0
23	240	11.2						3.0

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 37

Christchurch, New Zealand (43.6°S, 172.8°E) — 5eptember 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.8					<1.7	2.5
01	290	6.5					<1.7	2.5
02	290	6.2					<1.6	2.55
03	290	5.8					<1.5	2.6
04	280	5.2					<1.5	2.5
05	290	4.8					<1.5	2.6
06	270	5.6				(1.7)		2.8
07	250	7.3				2.4		3.1
08	240	8.7	---	---		3.0		3.0
09	230	9.6	230	---		3.3		3.0
10	(260)	10.3	220	---		3.6		2.9
11	270	11.0	230	4.7		3.7		2.9
12	280	10.9	220	5.0		3.8		2.9
13	(260)	10.8	220	4.8		3.8		2.8
14	240	10.5	230	---		3.6		2.8
15	240	10.4	240	---		3.3		2.8
16	250	10.1				3.0		2.8
17	250	9.5				(2.4)		2.8
18	250	9.2				(1.6)		2.75
19	250	8.9					<1.5	2.7
20	260	8.3					<1.7	2.6
21	280	7.7					<1.7	2.6
22	290	7.2					<1.7	2.6
23	290	7.0					<1.6	2.5

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 38

Oecepcion 1. (63.0°S, 60.7°W) — September 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	350	4.4					10.0	2.9
01	380	4.2					10.0	2.8
02	380	3.8					10.0	2.8
03	360	3.8					10.0	2.8
04	360	3.6					10.0	2.8
05	380	3.5					10.0	2.9
06	380	3.5					10.0	2.9
07	260	4.4					10.0	3.4
08	230	6.9					4.6	3.7
09	230	8.1					10.0	3.6
10	230	9.3					10.0	3.6
11	230	10.1					4.6	3.6
12	220	10.4					4.3	3.6
13	220	10.2					4.6	3.6
14	230	10.2					4.6	3.7
15	230	10.4					4.6	3.6
16	230	9.8					3.8	3.55
17	230	9.6					4.6	3.6
18	230	8.8					7.0	3.6
19	230	7.7						3.6
20	230	7.0					4.6	3.45
21	270	5.8					3.8	3.3
22	280	5.1					4.6	3.1
23	320	4.4					10.0	2.9

Time: 60.0°W.
Sweep: 1.5 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 39

Resolute Bay, Canada (74.7°N, 94.9°W) — August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		6.0		---	110	1.8		(2.80)
01		5.6		---	105	1.8		(2.80)
02		5.8		---	110	1.8		(2.80)
03		5.4		---	105	1.9		(2.70)
04		5.8		3.5	100	2.0	5.0	(2.90)
05		5.6		3.6	100	2.3	3.5	(3.00)
06		5.8		4.0	100	2.5		3.00
07		6.0		4.0	100	2.8		(2.90)
08		5.6		4.2	100	3.0		2.90
09		5.8		4.3	100	3.0		2.80
10		5.7		4.6	100	3.1		2.55
11		5.9		4.5	100	3.2		(2.65)
12		5.8		4.5	100	3.2		(2.80)
13		5.8		4.6	100	3.2		(2.60)
14		5.9		4.6	100	3.2		G
15		5.8		4.5	100	3.1		(2.60)
16		5.8		4.4	100	3.0		(2.70)
17		6.0		4.3	100	3.0		(2.70)
18		6.0		4.1	100	2.8		2.80
19		6.0		4.0	105	2.6		2.90
20		6.0		3.8	105	2.3		2.80
21		5.9		---	105	2.0		(2.90)
22		5.8		---	110	1.9		(2.90)
23		5.7		---	110	1.8		(2.90)

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 40

Baker Lake, Canada (64.3°N, 96.0°W) — August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.6			---	E	4.8	2.85
01		5.4			---	E	4.5	(2.8)
02		5.3			---	E	4.3	(2.7)
03		4.8			---	(1.3)	3.8	2.9
04		4.5			110	1.6	4.0	2.9
05		5.0		---	110	2.0		(2.9)
06		5.0		(3.9)	110	2.3		2.75
07		5.2		4.0	110	2.7		(2.8)
08		5.6		4.3	105	3.0		2.75
09		5.4		4.5	100	3.4		2.5
10		5.2		4.7	100	3.6		2.45
11		5.9		4.7	100	3.7		2.55
12		6.4		5.0	100	3.7		2.65
13		6.8		5.0	100	3.6		2.7
14		7.0		4.9	100	3.5		2.55
15		6.8		4.9	100	3.4		2.7
16		6.8		4.7	105	3.3		2.7
17		6.6		4.6	110	3.1		2.7
18		6.6		4.1	110	2.7	5.0	2.8
19		6.4		---	115	2.3	4.7	2.8
20		6.1		---	110	2.0	5.0	2.8
21		5.9			120	1.8	6.0	2.75
22		5.6			---	1.3	5.6	2.8
23		5.6			---	E	6.5	2.8

Time: 90.0°W.
Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 41

Churchill, Canada (58.8°N, 94.2°W) — August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.0			---	---	6.0	---
01		5.0			---	---	5.3	---
02		4.6			---	2.0	5.8	
03		4.2			---	1.8	5.0	
04		4.3			125	2.0	4.8	
05		4.6		3.2	120	2.4	4.2	---
06		5.0		4.0	110	3.0	4.6	2.7
07		5.0		4.1	105	3.1	5.0	2.8
08		5.6		4.8	105	3.2	5.0	2.6
09		6.0		4.9	100	3.4	4.6	2.6
10		6.3		5.0	100	3.5	5.0	2.6
11		6.6		5.1	100	3.6	4.2	2.6
12		6.8		5.1	100	3.7		2.6
13		7.0		5.1	105	3.7		2.6
14		7.0		5.1	100	3.7		2.65
15		7.2		5.0	100	3.5		2.7
16		7.0		4.9	110	3.4		2.8
17		7.0		4.6	105	3.1		2.7
18		6.5		4.3	110	3.0		2.7
19		6.3		---	110	2.9		2.7
20		5.4		---	120	2.6		2.8
21		5.4			120	2.2	4.7	(2.7)
22		5.2			130	1.9	6.2	---
23		5.3			---	---	6.1	---

Time: 90.0°W.
Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 42

Lindau/Harz, Germany (51.6°N, 10.1°E) — August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	6.20					3.0	2.50
01	300	5.90					2.9	2.50
02	300	5.60					2.9	2.50
03	300	5.20			---	E	3.0	2.50
04	300	4.95			---	E	2.4	2.50
05	285	5.05	285	----	---	E	3.4	2.70
06	265	6.10	260	----	110	2.20	3.6	2.85
07	300	7.00	240	----	110	2.70	4.4	2.85
08	315	7.60	240	4.70	105	3.10	5.2	2.85
09	310	7.80	225	5.00	100	3.35	4.8	2.75
10	340	8.00	215	5.30	100	3.50	5.5	2.75
11	350	8.00	215	5.50	100	3.60	5.1	2.70
12	350	7.95	220	5.50	100	3.70	5.0	2.70
13	360	7.95	215	5.60	100	3.70	4.7	2.70
14	360	8.00	225	5.40	100	3.70	4.4	2.70
15	350	7.95	220	5.40	100	3.60	4.1	2.70
16	340	7.85	230	----	105	3.40	3.9	2.75
17	315	7.90	240	----	105	3.10	4.5	2.75
18	280	8.10	250	----	110	2.60	4.2	2.80
19	260	8.60	---	----	110	2.00	4.2	2.80
20	250	8.30			---	E	3.6	2.85
21	255	7.75			---	E	3.4	2.75
22	260	7.10					3.1	2.60
23	280	6.60					3.3	2.55

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 4 minutes.

Table 43

Winnipeg, Canada (49.9°N, 97.4°W) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		4.5					<1.6	2.70
01		4.0					<1.7	2.70
02		3.8					<1.6	2.70
03		3.5					<1.6	(2.65)
04		3.4					<1.7	(2.70)
05		3.8			---	1.8		2.80
06		4.8		---	125	2.2		2.90
07		5.2		4.0	115	2.8		2.90
08		5.9		4.3	110	3.0		2.80
09		6.1		4.6	110	3.3		2.70
10		6.4		5.0	110	3.6		2.70
11		6.8		5.0	110	3.8		2.60
12		6.8		5.0	110	3.9		2.70
13		6.9		5.1	110	3.9		2.60
14		6.8		5.0	110	3.8		2.65
15		6.9		5.0	110	3.7		2.70
16		6.9		4.9	110	3.4		2.70
17		7.0		4.8	110	3.0		2.75
18		7.0		---	115	2.8		2.80
19		7.0			130	2.2		2.80
20		6.9			---	1.8		2.80
21		6.6					<1.7	2.80
22		5.8					<1.6	2.90
23		4.8					<1.7	2.80

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 44

Schwarzenburg, Switzerland (46.8°N, 7.3°E) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.45						3.0
01	300	6.10						3.0
02	300	5.90						3.0
03	300	5.60						3.0
04	300	5.40						2.9
05	290	5.15			---	----		3.05
06	230	6.25			100	2.00		3.4
07	200	6.75	---	----	100	2.50		3.5
08	200	7.60	200	4.80	100	3.00	4.2	3.4
09	250	8.40	200	5.20	100	3.30		3.3
10	300	8.60	200	5.50	100	3.50		3.2
11	300	8.60	200	5.70	100	3.60		3.2
12	300	9.00	200	5.80	100	3.80		3.1
13	300	8.20	200	5.75	100	3.80		3.2
14	320	8.45	200	5.60	100	3.80		3.1
15	300	8.50	200	5.60	100	3.60		3.2
16	300	8.50	200	5.35	100	3.40		3.2
17	210	8.50	---	----	100	3.20		3.3
18	220	8.50			100	2.60		3.3
19	250	8.50			100	2.20		3.4
20	230	8.60			---	----		3.4
21	240	7.70						3.35
22	265	7.00						3.25
23	300	6.80						3.1

Time: 15.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 45

Ottawa, Canada (45.4°N, 75.9°W) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.4					<1.5	2.7
01		4.7					<1.5	2.7
02		4.6					<1.5	2.7
03		3.8			---	---	<1.5	2.7
04		3.8			---	---	<1.5	2.7
05		4.2			120	1.6		2.9
06		5.2		3.8	110	2.4		3.0
07		6.0		4.4	110	2.9		2.9
08		6.4		4.9	105	3.3		2.9
09		6.7		5.0	105	3.7		2.8
10		7.0		5.1	105	3.9		2.8
11		7.0		5.4	105	4.0		2.7
12		7.2		5.4	105	4.0		2.7
13		7.2		5.5	105	4.0		2.7
14		7.2		5.3	105	3.9		2.7
15		7.2		5.2	105	3.8		2.7
16		7.6		5.0	105	3.5		2.8
		7.6		4.7	105	3.0		2.8
		7.7		4.0	110	2.6		2.8
		7.8			115	1.8		2.9
20		7.5					<1.6	2.85
21		7.0					<1.6	2.8
22		6.3					<1.6	2.7
23		5.9					<1.6	2.7

Time: 75.0°W.
Sweep: 1.0 Mc to 15.0 Mc in 15 seconds.

Table 46

Leopoldville, Belgian Congo (4.4°S, 15.2°E) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	205	9.8					1.6	2.7
01	220	7.1					2.2	2.6
02	230	6.0					2.1	2.7
03	240	5.3					2.2	2.7
04	240	4.2					2.2	2.8
05	265	5.7	---	---	---	---	2.7	2.7
06	250	9.7	240	---	120	2.6	2.8	2.9
07	260	11.5	230	---	110	3.3	3.0	2.8
08	275	12.1	220	---	110	3.7	4.5	2.7
09	290	12.0	210	---	105	4.0	4.6	2.7
10	310	12.4	210	5.4	105	4.0	3.0	2.5
11	355	12.7	210	5.5	105	4.1		2.4
12	380	13.0	230	5.2	105	4.1		2.3
13	390	>13.6	245	5.8	105	4.0	2.8	2.3
14	380	14.0	240	---	105	3.6	3.0	<2.4
15	360	14.0	235	---	105	3.2	3.0	2.4
16	325	>13.7	245	---	115	2.6	3.2	2.4
17	270	>13.5					3.0	<2.6
18	280	>15.0					3.0	<2.8
19	275	>13.2					2.6	<2.9
20	220	>14.0						<3.0
21	205	>13.6						<2.9
22	215	>14.2						(2.75)
23	210	13.1						2.8

Time: 0.0°.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 47

Elisabethville, Belgian Congo (11.6°S, 27.5°E) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	4.4						2.65
01	260	3.6					1.8	2.55
02	265	3.0					1.7	2.6
03	270	3.0					1.7	2.6
04	260	4.0			---	---	1.6	2.7
05	240	8.6	240	---	120	2.3	2.6	3.0
06	250	10.3	230	---	105	3.1		2.9
07	260	11.0	220	---	105	3.6	2.8	<2.9
08	265	11.0	215	5.0	105	3.8	3.5	2.8
09	280	11.2	220	5.4	105	3.9		2.7
10	300	11.2	210	5.4	105	4.0		2.6
11	310	11.0	220	5.2	100	4.0		2.5
12	345	11.1	240	5.4	100	3.8		2.4
13	340	>11.3	230	---	105	3.6	2.9	2.4
14	330	11.6	235	---	110	3.3	3.7	2.5
15	270	11.7	240	---	110	2.7	3.5	2.5
16	250	11.8			---	---	3.0	2.6
17	240	11.6					2.8	2.7
18	230	11.3					2.5	2.75
19	220	10.3					2.6	2.7
20	220	10.0						2.7
21	225	8.9						2.7
22	220	7.0						2.7
23	230	5.7						2.7

Time: 0.0°.
Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 48

Rarotonga I. (21.3°S, 159.8°W) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	7.0						2.9
01	250	6.7						3.0
02	250	5.4						2.9
03	250	4.7						2.8
04	280	4.5						2.7
05	290	4.0						2.7
06	320	4.2						2.6
07	270	7.6	---	---	(130)	1.9		3.1
08	260	11.0	250	4.5	115	3.0		3.2
09	270	12.6	240	5.0	110	3.4		3.1
10	270	13.5	230	5.4	105	3.6		3.2
11	270	12.1	220	5.5	105	3.8		3.0
12	270	11.6	210	5.5	105	3.8		2.9
13	290	11.6	210	5.5	105	3.8	5.3	2.8
14	300	11.4	220	5.5	105	3.7	4.6	2.75
15	340	11.2	230	5.6	105	3.5	4.5	2.7
16	310	10.6	250	5.5	110	3.2	3.9	2.8
17	270	(9.9)	250	4.5	120	2.5		(2.9)
18	270	(9.6)			---	---	2.0	(3.0)
19	260	(9.5)					2.0	(2.9)
20	250	(9.0)					1.8	(3.0)
21	250	(8.3)					2.0	(2.9)
22	250	(8.3)						(3.1)
23	250	(8.0)						(3.05)

Time: 157.5°W.
Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 49

Watheroo, W. Australia (30.3°S, 115.9°E) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	4.2					2.2	2.9
01	250	4.1					1.3	3.0
02	240	4.2					2.3	3.0
03	250	4.2					1.4	3.1
04	240	4.1						3.1
05	250	4.0						3.0
06	240	4.0						3.0
07	230	6.0				1.8	1.8	3.4
08	220	8.5	220	3.8		2.6	2.7	3.5
09	240	9.9	210	4.5		3.2	3.8	3.4
10	250	10.5	210	4.9		3.5	3.8	3.2
11	250	11.0	210	5.0		3.6	3.8	3.1
12	250	11.0	200	5.0		3.7	3.8	3.0
13	250	11.0	200	5.0		3.7	3.8	3.0
14	250	10.7	200	4.9		3.6	3.8	3.0
15	250	10.6	210	4.8		3.4	3.6	3.0
16	250	10.4	220	4.4		3.0	3.3	3.1
17	230	9.9	---	---		2.5	2.6	3.1
18	220	8.4				1.7	2.0	3.3
19	200	6.9					1.9	3.4
20	220	6.0						3.2
21	220	5.2					2.3	3.15
22	240	5.1					2.1	3.0
23	240	4.6					2.4	3.0

Time: 120.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 45 seconds.

Table 50

Christchurch, New Zealand (43.6°S, 172.8°E) July 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	4.0						2.9
01	290	4.0					2.8	2.8
02	300	3.9						2.8
03	290	3.8						2.9
04	280	3.4						3.0
05	270	3.2						3.0
06	260	2.8						3.0
07	250	3.6				---		3.1
08	230	6.4	---	---		2.2		3.5
09	230	7.9	---	---		2.7		3.4
10	240	9.0	240	---		2.9		3.4
11	250	9.7	230	---		3.2		3.3
12	250	9.9	240	(4.1)		(3.2)		3.3
13	240	9.3	230	---		3.2		3.2
14	250	9.2	240	---		(3.0)		3.2
15	250	9.0	240	---		2.8		3.2
16	230	8.8	---	---		(2.2)		3.2
17	240	7.4				---	2.7	3.1
18	250	6.5					3.6	3.1
19	250	5.6						3.1
20	250	4.7						2.95
21	270	4.4						3.0
22	280	4.2						2.9
23	290	4.0						2.8

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 secoods.

Table 51

Svalbard, Norway (78.2°N, 15.5°E) Juoe 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(425)	4.60	220	3.65	100	2.35	2.8	(2.70)
01	(515)	(4.70)	240	3.75	100	2.40	3.1	----
02	(540)	4.70	250	3.80	100	2.35	3.1	(2.50)
03	---	4.60	240	3.80	100	2.60	3.4	----
04	---	4.80	220	3.90	100	2.60	3.1	----
05	(690)	4.55	220	3.95	100	2.85	3.2	(2.15)
06	---	(4.70)	250	4.00	100	2.90	4.6	----
07	(600)	5.00	240	4.35	100	3.15	4.2	(2.30)
08	455	5.35	230	4.40	100	3.10	4.3	2.50
09	450	5.65	230	4.60	100	3.20	3.9	2.60
10	440	5.90	225	4.60	100	3.20	4.0	2.60
11	(410)	5.65	215	4.65	100	3.10	3.9	2.70
12	(445)	5.50	215	4.70	100	3.10	3.6	(2.60)
13	(495)	5.55	210	4.60	100	3.10	3.3	(2.50)
14	(410)	5.70	210	4.65	100	3.10	4.5	2.70
15	(465)	5.55	210	4.50	100	3.00	4.0	(2.65)
16	---	5.55	230	4.70	100	3.00	4.6	----
17	(410)	5.55	240	4.60	100	2.90	6.0	(2.65)
18	(430)	5.55	240	4.40	100	2.80	5.9	(2.70)
19	---	5.55	240	4.40	100	2.65	4.8	(2.65)
20	(340)	5.35	245	4.40	100	2.60	4.8	(2.85)
21	(385)	5.30	250	3.90	100	2.50	3.2	(2.70)
22	(335)	5.05	240	3.85	100	2.40	3.2	(2.75)
23	(470)	4.55	245	3.75	100	2.40		(2.60)

Time: 15.0°E.
Sweep: 0.68 Mc to 24.6 Mc in 5 minutes, automatic operation.

Table 52

Rarotonga I. (21.3°S, 159.8°W) June 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.6						2.9
01	260	4.8						2.9
02	270	4.3						2.9
03	270	4.4						3.0
04	260	3.5						2.95
05	270	3.5						2.9
06	290	3.8						2.8
07	260	7.2			---	1.4	1.8	3.1
08	260	10.5	250	4.0	120	2.6		3.25
09	260	12.6	240	4.8	110	3.1		3.3
10	250	12.2	240	5.0	110	3.5		3.3
11	260	10.9	230	5.2	110	3.5		3.1
12	270	11.0	230	5.3	110	3.6		3.1
13	280	10.6	240	5.2	105	3.6		3.0
14	270	10.0	240	5.0	110	3.5	3.5	3.0
15	280	10.4	240	5.0	110	3.3	3.6	2.9
16	260	(10.0)	250	4.4	115	2.9	3.7	(3.1)
17	250	(9.7)	---	---	130	2.2	3.2	(3.1)
18	250	(9.4)			---	---	2.4	(3.2)
19	230	7.8					2.5	3.1
20	240	7.0					1.9	2.9
21	250	6.8					1.8	2.8
22	250	6.1					1.8	2.9
23	250	5.4						2.9

Time: 157.5°W.
Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 53

Delhi, India (28.6°N, 77.1°E) February 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	4.0						3.00
01	300	3.8						3.10
02	300	4.6						3.10
03								
04	280	3.8						3.25
05	280	3.4						3.25
06	280	3.5						3.25
07	240	6.9						3.60
08	240	9.4						3.60
09	260	10.8						3.40
10	280	11.0						3.25
11	280	11.4						3.25
12	280	11.8						3.25
13	300	12.2						3.10
14	280	12.3						3.25
15	290	11.8						3.20
16	280	11.9						3.25
17	280	12.6						3.25
18	280	11.7						3.25
19	280	9.5						3.25
20	280	9.0						3.25
21	280	7.0						3.25
22	320	5.5						3.00
23	320	5.0						3.00

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 54

Ahmedabad, India (23.0°N, 72.6°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	>7.0					2.0	2.85
01	255	6.3					2.5	2.90
02	250	6.4						2.90
03	250	5.5					3.0	3.20
04	240	5.2					>3.0	3.20
05	250	3.3					2.7	2.95
06	260	2.9					2.5	3.00
07	250	6.4			122	1.8	3.6	3.25
08	250	9.0	235	4.2	110	2.5	3.6	3.30
09	260	11.0	230	4.6	107	3.0	3.5	3.25
10	255	11.3	225	4.8	105	3.4	3.6	3.05
11	270	12.2	225	5.0	105	3.6		3.05
12	280	12.0	215	5.2	105	3.7		2.90
13	300	12.8	230	5.1	105	3.6		2.85
14	300	14.0	230	5.0	105	3.6	3.6	2.85
15	280	14.0	230	4.9	107	3.5	3.7	2.85
16	270	14.6	230	4.7	110	3.0	3.5	<2.85
17	260	14.9	250	4.3	115	2.5		2.90
18	250	14.3			---	---	>2.8	3.05
19	235	12.6					2.4	3.00
20	235	13.2						2.90
21	230	12.6						3.05
22	220	10.1						3.15
23	230	10.8						2.90

Time: 75.0°E.
Sweep: 0.6 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 55

Calcutta, India (22.9°N, 88.5°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	5.0						3.3
01	250	4.7						3.3
02	250	4.6						3.35
03	230	4.5					2.0	3.4
04	230	3.7					2.0	3.1
05	260	3.5					2.1	2.95
06	265	3.5					2.0	2.9
07	250	6.6	---	---	120	2.0		3.3
08	250	9.7	240	4.5	110	2.8		3.4
09	270	10.5	235	4.6	105	3.2		3.4
10	285	11.0	220	4.6	100	3.4		3.3
11	290	11.0	200	4.8	100	3.5		3.3
12	300	10.9	---	---	100	3.5		3.2
13	310	11.0	---	---	100	3.5		3.3
14	300	11.0	210	4.6	100	3.5		3.3
15	290	11.0	220	4.6	100	3.2		3.4
16	260	11.0	240	4.4	100	3.0		3.3
17	250	10.7	250	---	110	2.6		3.4
18	250	10.6			---	---	2.1	3.5
19	240	10.2					2.1	3.5
20	230	9.8					2.0	3.5
21	220	9.3						3.5
22	230	8.4					2.0	3.5
23	240	6.2						3.4

Time: 90.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 56

Bombay, India (19.0°N, 73.0°E) February 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	270	4.2						3.35
07	300	5.0						3.10
08:30	300	6.7						3.10
09	330	7.8						2.95
10	360	9.2						2.80
11	390	11.0						2.65
12	390	11.8						2.65
13	420	12.3						2.55
14	420	12.6						2.55
15	420	12.4						2.55
16	420	11.8						2.55
17	390	10.9						2.65
18	360	10.2						2.80
19	360	8.6						2.80
20	---	---						----
21	270	6.1						3.35
22	270	5.0						3.35
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 57

Madras, India (13.0°N, 80.2°E) February 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	280	7.0						3.25
07	320	10.2						3.00
08	340	11.4						2.90
09	380	12.2						2.70
10	400	11.6						2.60
11	440	11.8						2.50
12	440	11.4						2.50
13	480	11.3						2.30
14	480	11.4						2.30
15	480	11.4						2.30
16	470	11.8						2.35
17	440	11.6						2.50
18	460	11.0						2.40
19	440	11.0						2.50
20	400	11.0						2.60
21	(380)	>11.3						(2.70)
22	(360)	>11.6						(2.80)
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 58

Tiruchy, India (10.8°N, 78.8°E) February 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	320	4.7						3.00
07	360	8.2						2.80
08	400	9.5						2.60
09	480	10.0						2.30
10	480	10.0						2.30
11	480	10.2						2.30
12	480	10.2						2.30
13	480	10.1						2.30
14	480	10.0						2.30
15	480	10.0						2.30
16	480	9.6						2.30
17	480	9.5						2.30
18	480	9.0						2.30
19	480	8.6						2.30
20	(480)	(8.2)						(2.30)
21	(360)	(8.3)						(2.80)
21:30	---	---						----
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 59

Kodaikanal, India (10.2°N, 77.5°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	9.0						3.10
01	235	8.1						3.20
02	235	6.9						3.10
03	240	5.8						3.10
04	240	5.2						3.10
05	240	3.9						3.20
06	270	4.2						2.90
07	260	8.4	245	---	120	2.5		3.00
08	280	10.5	240	---	110	3.0	8.6	2.80
09	300	11.2	220	---	105	---	10.9	2.60
10	310	10.7	220	---	105	---	12.0	2.40
11	320	10.8	210	4.9	105	---	12.4	2.35
12	340	10.7	205	---	105	---	12.4	2.35
13	345	10.6	205	---	105	---	12.4	2.30
14	(355)	10.7	210	---	105	---	12.3	2.30
15	(350)	10.7	210	---	110	3.4	11.2	2.30
16	240	10.7	235	---	110	---	10.0	2.25
17	260	10.4	---	---	120	---	8.2	2.30
18	300	9.5			---	---		2.30
19	370	8.6						2.20
20	360	9.0						2.30
21	315	(10.1)						(2.55)
22	265	9.6						2.80
23	250	9.0						2.95

Time: 75.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 60

Townsville, Australia (19.3°S, 146.7°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	---					3.6	---
01	250	>7.0					2.9	---
02	250	>6.4					3.0	(3.0)
03	260	6.0					2.1	3.0
04	260	5.5					2.0	3.0
05	260	4.8						2.9
06	260	>5.0				1.6		3.05
07	250	>6.7	240	---		2.5		3.15
08	275	7.8	240	4.6		3.1	3.5	3.2
09	300	>8.4	230	4.9		3.4	4.1	3.1
10	310	>8.4	210	5.1		3.6	5.2	2.8
11	350	(8.6)	210	5.2		3.8	4.8	(2.9)
12	345	>10.1	210	5.6		3.8	5.6	---
13	325	>8.4	225	5.4		3.9	5.3	---
14	330	>8.4	210	5.3		3.8	5.0	---
15	310	>12.0	---	5.2		3.7	5.0	---
16	290	>8.4	230	4.6		3.5	4.3	
17	280	(8.8)	---	4.3		3.1	5.0	(3.1)
18	260	>7.9	---	---		2.2	4.1	(3.1)
19	255	7.2				---	3.9	(2.9)
20	295	---					3.5	---
21	300	---					3.1	---
22	300	>7.9					3.1	---
23	305	>7.9					3.7	---

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 61

Rarotonga I. (21.3°S, 159.8°W) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	9.1					2.8	2.9
01	260	(8.9)					3.0	(3.1)
02	260	7.3					2.3	3.0
03	290	(7.0)					2.0	(2.8)
04	310	7.0					1.8	2.8
05	290	6.5					2.2	2.8
06	280	6.9			---	---	2.4	3.0
07	250	8.6	250	4.0	115	2.5	3.4	3.2
08	260	9.3	240	4.5	115	3.0	3.5	3.1
09	290	10.0	250	5.0	115	3.4	4.4	2.9
10	310	11.2	240	5.5	115	3.6	3.9	2.8
11	340	12.6	250	5.5	115	3.8	5.2	2.75
12	350	13.9	240	5.5	115	3.8	3.9	2.8
13	340	14.9	240	5.6	115	3.9		2.9
14	330	14.6	250	5.8	115	3.8		2.9
15	310	14.0	250	5.7	115	3.7		2.9
16	310	13.4	250	5.4	115	3.5	3.8	2.9
17	300	12.4	250	5.0	115	3.0	3.8	2.95
18	280	10.9	---	---	120	2.3	3.9	2.8
19	280	9.7					3.5	2.85
20	300	9.0					3.2	2.7
21	310	9.0					3.2	2.7
22	300	(9.3)					3.2	(2.85)
23	300	(9.4)					3.0	(2.9)

Time: 157.5°W.
Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.

Table 62

Brisbane, Australia (27.5°S, 153.0°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	7.5					2.6	2.9
01	250	7.0					2.6	2.9
02	235	6.4					2.1	2.9
03	240	5.5						2.85
04	235	5.4						2.9
05	255	5.2						2.9
06	220	6.2	---	---		(2.0)	2.1	3.3
07	230	7.4	220	---		2.8	4.2	3.25
08	260	8.0	210	4.5		3.2	5.0	3.1
09	285	8.5	200	5.0		(3.5)	5.6	3.0
10	290	9.1	200	5.0		(3.7)	5.5	3.0
11	300	9.6	200	5.4		(3.8)	5.4	2.8
12	305	9.8	190	5.4		(3.9)	4.8	2.8
13	300	10.2	200	5.2		(3.8)	5.1	2.8
14	300	10.0	210	5.0		(3.8)	4.6	2.8
15	300	10.0	210	4.9		3.7	4.9	2.9
16	290	9.5	210	4.6		3.4	4.3	2.95
17	255	9.0	220	---		2.8	4.0	3.0
18	240	8.5	---	---		E	4.0	3.0
19	220	7.8					1.7	2.8
20	255	7.4					2.2	2.8
21	280	7.3					2.9	2.7
22	290	7.3					3.1	2.7
23	280	7.4					3.5	2.8

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 63

Canberra, Australia (35.3°S, 149.0°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	(6.4)					3.3	(2.7)
01	---	6.6					3.4	(2.8)
02	---	5.8					3.2	2.9
03	(240)	5.1					2.8	2.9
04	---	4.6					1.6	2.8
05	250	4.5						2.8
06	260	4.8				(1.9)		3.0
07	300	6.2	240	4.0		2.6	3.2	3.05
08	300	6.8	240	4.5		3.1	3.7	3.1
09	320	7.0	230	4.7		3.4	4.3	3.0
10	340	7.1	210	5.0		3.6	4.5	2.9
11	330	8.0	200	5.0		(3.7)	4.6	2.95
12	350	8.1	210	5.0		(3.7)	4.6	2.8
13	340	8.2	210	5.1		---	4.1	2.9
14	340	8.1	210	5.1		(3.7)	4.3	2.9
15	330	8.2	230	5.1		(3.6)		2.9
16	310	8.1	220	4.6		3.4		3.0
17	290	7.6	240	(4.5)		3.0	3.3	3.0
18	260	7.5	250	---		2.4	3.2	3.05
19	250	7.4					3.3	3.05
20	(250)	7.2					3.5	2.9
21	---	6.9					3.4	2.8
22	---	6.8					3.3	2.7
23	---	(6.8)					3.0	(2.7)

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 64

Hobart, Tasmania (42.9°S, 147.3°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.8						2.8
01	280	5.4						2.9
02	290	4.8						2.9
03	270	4.5						2.9
04	280	3.6						2.8
05	280	3.7				E		2.9
06	260	4.6				2.0		3.1
07	250	5.5	---	---		2.5		3.0
08	250	6.3	---	---		3.1		3.1
09	300	6.6	220	4.7		3.5		3.0
10	320	6.8	220	4.8		3.6		3.0
11	330	6.9	220	4.9		3.8		3.0
12	340	7.1	220	5.0		3.8		3.0
13	350	7.3	220	5.0		3.7		2.9
14	350	7.1	220	5.1		3.7		2.9
15	340	7.2	230	4.8		3.5		2.9
16	250	7.0	220	4.6		3.3		2.95
17	250	7.1				3.0		3.0
18	250	7.4				2.5		3.05
19	250	7.2				E	2.0	3.0
20	270	7.3						2.9
21	280	7.0						2.9
22	300	6.3						2.8
23	290	6.0						2.8

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 65

Christchurch, New Zealand (43.6°S, 172.8°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	6.4					2.4	2.7
01	280	6.1					2.2	2.7
02	280	5.6						2.7
03	280	5.0						2.7
04	280	4.8					2.5	2.75
05	280	4.6				1.3		2.9
06	260	5.4	270	---		1.9		3.0
07	310	6.3	250	4.1		2.7		3.1
08	300	6.9	240	4.6		3.0		3.05
09	300	7.5	230	4.8		3.2		3.0
10	320	7.6	220	4.8		3.4		2.85
11	340	8.0	220	5.2		3.5		2.9
12	330	8.0	220	5.3		3.6		2.9
13	330	8.0	230	5.2		3.6		2.8
14	340	7.9	230	5.2		3.5		2.9
15	330	8.1	240	4.9		3.4		2.9
16	320	8.0	250	4.7		3.3		2.8
17	300	8.1	260	4.3		2.9		2.9
18	280	8.2	270	3.7		2.3		2.9
19	270	8.5	---	---		1.6	3.8	2.9
20	260	8.3					3.6	2.8
21	270	7.7					3.4	2.8
22	280	7.1					3.4	2.7
23	280	6.7					3.6	2.6

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 66*

Campbell I. (52.5°S, 169.2°E) September 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	---	E						2.85
06	260	2.6			---	1.6		3.1
07	250	3.5	240	2.5	130	2.0		3.3
08	260	4.0	230	3.0	115	2.3		3.2
09	310	4.3	240	3.6	115	2.6		3.1
10	400	4.3	230	3.7	115	2.8		2.9
11	380	4.5	230	3.8	115	2.8		2.9
12	390	4.5	230	3.8	115	2.9		2.9
13	380	4.4	230	3.7	110	2.8		3.0
14	350	4.4	230	3.7	110	2.6		3.0
15	310	4.4	230	3.4	120	2.4		3.1
16	290	4.2	240	3.0	125	2.1		3.2
17	250	4.2	240	2.4	---	1.8		3.1
18	250	3.6						3.0
19	---	3.0						2.9
20	---	2.7						2.9
21	---	2.3						2.8
22	---	2.0						2.75
23	---	E						(2.65)

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 19-hour working schedule.

Table 67*

Campbell I. (52.5°S, 169.2°E) August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	---	E						
06	---	E						---
07	250	2.7	---	---	---	1.6		3.1
08	240	3.6	230	2.6	120	1.9		3.3
09	260	4.1	230	3.1	115	2.3		3.3
10	280	4.3	230	3.5	115	2.5		3.2
11	310	4.5	240	3.6	115	2.7		3.1
12	300	4.6	230	3.7	110	2.6		3.2
13	310	4.6	230	3.6	120	2.6		3.1
14	290	4.5	220	3.4	120	2.5		3.2
15	270	4.5	230	3.2	120	2.2		3.3
16	250	4.2	230	2.6	---	1.8		3.2
17	240	3.8			---	1.3		3.1
18	250	3.2						3.0
19	---	2.8						2.8
20	---	2.4						2.8
21	---	1.8						2.75
22	---	E						---
23	---	E						---

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 19-hour working schedule.

Table 68*

Campbell I. (52.5°S, 169.2°E) August 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	---	E					1.5	---
06	---	1.5					1.8	2.9
07	250	2.8			120	1.4		3.15
08	250	3.5	220	---	110	1.9		3.3
09	250	4.0	230	3.3	110	2.3		3.3
10	280	4.1	220	3.4	110	2.5		3.2
11	310	4.2	220	3.6	110	2.5		3.2
12	310	4.4	230	3.6	110	2.6		3.2
13	300	4.5	230	3.6	110	2.6		3.2
14	290	4.7	230	3.4	110	2.4		3.1
15	280	4.8	240	3.2	120	2.1		3.2
16	250	4.4	240	2.4	130	1.7		3.2
17	240	3.8			140	1.4		3.1
18	250	3.1						3.0
19	260	2.6						2.8
20	400	2.3						2.9
21	---	2.2						2.85
22	---	1.8					2.0	2.75
23	---	E					2.0	---

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 19-hour working schedule.

Table 69*

Campbell I. (52.5°S, 169.2°E) July 1952

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	320	1.8					2.0	(2.7)
06								
07	300	2.7	---	---				2.9
08	270	3.6	260	---	130	1.7	1.9	3.2
09	280	4.3	260	3.0	130	2.1		3.2
10	280	4.7	250	3.1	130	2.3		3.2
11	280	4.8	240	3.3	130	2.5		3.2
12	290	5.2	250	3.4	130	2.5		3.15
13	280	5.2	240	3.3	130	2.4		3.2
14	280	5.4	250	3.0	130	2.2		3.1
15	270	5.2	250	2.9	140	1.8		3.2
16	250	4.8			---	---	1.4	3.1
17	260	4.2						2.9
18	280	3.4						2.9
19	310	3.2						2.7
20								
21	340	2.4						2.8
22								
23	370	3.0					2.0	2.7

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 16-hour working schedule.

Table 70*

Campbell I. (52.5°S, 169.2°E) June 1952

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	320	2.0					1.8	2.9
06								
07	300	3.2	---	---	---	---		2.8
08	270	3.6	260	---	130	1.7	1.9	3.1
09	280	4.2	260	3.0	130	2.0		3.2
10	280	4.6	250	3.1	130	2.2		3.1
11	290	4.9	250	3.3	130	2.4		3.1
12	290	5.0	250	3.3	130	2.3		3.1
13	280	5.2	250	3.2	130	2.3		3.1
14	280	5.1	260	3.0	130	2.1		3.1
15	260	5.3			130	1.7		3.1
16	250	4.9						3.0
17	270	3.9						2.85
18	290	3.0						2.7
19	320	3.1						2.5
20								
21	350	2.8						2.65
22								
23	360	4.0						2.65

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 16-hour working schedule.

Table 71*

Campbell I. (52.5°S, 169.2°E) February 1952

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	270	4.0	220	---	120	2.2		3.1
06								
07	320	5.0	240	4.1	130	2.8	3.0	3.0
08	330	5.5	240	4.2	130	3.0	3.1	2.9
09	350	5.7	240	4.3	130	3.1	3.2	2.8
10	340	5.8	240	4.4	125	3.2	3.2	2.9
11	360	6.0	240	4.5	120	3.3		2.9
12	360	6.0	240	4.5	120	3.4		2.85
13	360	6.1	240	4.5	120	3.3		2.9
14	350	6.1	240	4.4	120	3.2		2.8
15	350	6.3	250	4.2	120	3.1		2.9
16	320	6.4	250	4.0	130	2.9		2.9
17	320	6.4	260	3.9	130	2.6		2.9
18	280	6.4	---	---	130	2.2		2.8
19	280	6.3			---	---	2.0	2.9
20								
21	300	5.5						2.6
22								
23	320	5.0					3.0	2.6

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.
*Observations taken on a 16-hour working schedule.

Table 72

Tokyo, Japan (35.7°N, 139.5°E) September 1946

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.2					2.2	2.7
01	295	6.1					2.2	2.7
02	285	5.8					E	2.7
03	270	5.6					E	2.8
04	270	5.3					E	2.8
05	290	5.2					2.0	2.8
06	230	7.2	---	---	---	2.1	2.8	3.2
07	230	8.8	210	---	100	2.7	3.4	3.4
08	230	9.2	210	4.5	100	3.0	4.0	3.3
09	250	9.5	200	4.8	100	3.4	4.8	3.2
10	250	9.6	190	5.0	100	3.6	4.6	3.2
11	260	10.2	200	5.2	100	3.8	4.2	3.1
12	280	10.6	190	5.6	100	3.8	4.0	3.0
13	285	10.4	200	5.4	100	3.8	4.5	3.0
14	270	10.3	200	5.2	100	3.7	4.0	3.1
15	255	10.2	210	4.8	100	3.4	4.0	3.2
16	245	9.7	210	4.4	100	3.0	3.6	3.2
17	250	9.2	240	---	110	2.5	3.6	3.2
18	240	9.0	---	---	---	---	3.3	3.2
19	230	7.8					3.4	3.1
20	240	6.8					4.0	2.8
21	270	6.6					2.8	2.7
22	290	6.5					3.0	2.7
23	300	6.3					2.6	2.7

Time: 135.0°E.
Sweep: Lower limit of frequency 2.0 Mc, manual operation.

TABLE 73
IONOSPHERIC DATA

foF2, 0.1 Mc, Feb. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	51	48	51	54	48	43	45	58	95	116	137	133	130	124	120	118	115	113	107	89	74	68	66	56
02	55	54	58	55	48	44	38	53	90	108	123	128	132	120	120	124	124	123	112	91	91	76	72	68
03	60	56	U F 55	F 58	F 51	F 52	F 49	F 63	94	120	125	130	126	120	121	123	120	120	116	97	86	78	74	71
04	64	59	F 58	58	50	59	53	56	79	106	120	125	128	130	132	126	120	124	116	106	94	86	68	U F 66
05	U F 49	U F 44	U F 45	62	60	U F 44	U F 38	F 54	86	102	115	126	130	130	126	120	120	120	116	98	90	68	62	53
06	49	F 40	F 39	F 43	F 45	F 47	48	58	80	98	112	130	129	133	131	131	125	116	110	92	86	76	70	64
07	58	54	F 53	F 55	F 48	F 46	F 46	F 58	90	107	122	129	129	129	125	122	120	116	112	95	78	70	63	68
08	64	F 64	65	F 58	F 52	U F 54	F 49	58	92	113	125	132	128	126	119	123	I C 116	114	106	89	86	78	72	66
09	68	69	65	F 59	56	55	50	59	90	113	125	130	130	123	125	124	125	120	113	100	83	71	66	67
10	68	67	65	62	60	54	46	55	80	113	122	125	124	118	120	119	116	115	105	96	86	86	69	65
11	62	F 65	F 62	F 59	U F 58	F 56	F 55	68	94	113	128	135	131	128	131	130	125	117	117	102	82	80	71	62
12	59	60	62	F 58	U F 62	62	56	U F 68	89	118	132	I C 132	132	129	126	124	120	118	118	92	83	80	72	70
13	60	54	F 49	60	63	F 62	F 48	F 51	F 73	82	90	105	119	123	119	115	126	127	122	100	82	72	62	60
14	60	57	57	U F 56	U F 56	F 57	U F 56	U F 67	94	117	126	139	137	135	131	126	126	117	110	94	90	75	64	56
15	U F 52	U F 54	U F 56	U F 55	U F 52	U F 48	54	74	100	114	122	132	130	130	127	124	121	115	115	100	93	84	66	F 58
16	F 54	F 55	U F 52	U F 52	U F 54	U F 56	F 54	F 66	94	118	126	132	133	132	126	130	130	123	115	99	81	73	70	68
17	F 67	61	F 60	F 59	57	57	55	65	92	112	120	125	129	131	127	130	125	125	117	108	93	88	82	72
18	F 70	F 70	F 71	F 72	72	69	64	76	104	118	130	139	140	140	138	139	137	135	134	112	99	86	75	F 66
19	F 60	F 54	U F 46	U F 48	U F 48	54	62	82	108	118	127	139	144	142	141	140	140	140	116	84	83	73	U F 46	U F 49
20	F 56	U F 44	U F 39	U F 46	54	F 53	U F 43	U F 70	91	114	129	132	130	128	130	129	128	125	116	101	81	69	58	58
21	F 58	55	55	U F 53	F 40	F 44	50	62	81	90	102	118	119	125	130	126	118	113	97	98	87	78	F 67	F 64
22	F 61	U F 50	U F 40	U F 52	U F 57	F 57	F 55	F 66	98	106	120	127	124	125	125	126	124	121	118	100	85	72	62	58
23	56	57	53	47	39	U F 38	U F 38	64	100	118	126	127	126	125	126	125	120	132	120	92	79	J F 60	J F 31	I F 31
24	F	U F 29	U F 29	U F 29	U F 30	U F 36	F 38	54	72	86	98	109	106	107	109	108	108	107	100	80	68	57	52	48
25	49	50	46	F 42	F 35	F 31	F 32	56	80	90	94	106	110	116	115	115	117	112	102	90	74	67	61	59
26	55	55	55	F 53	52	50	47	70	90	103	110	117	120	122	119	120	115	114	110	94	84	76	68	65
27	67	67	62	57	52	F 46	F 44	74	100	115	120	120	123	122	121	119	115	115	112	102	86	73	70	66
28	64	58	52	49	44	F 44	F 44	74	98	108	111	124	125	126	129	127	126	122	113	110	92	82	68	66
MED	60	56	56	55	52	52	49	64	92	114	122	128	130	126	126	124	120	119	114	98	86	76	68	64
NO	27	29	28	29	28	28	29	28	28	29	28	28	29	28	29	28	28	28	28	28	28	28	28	28

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 74
IONOSPHERIC DATA

foF2, 0.1 Mc, Feb. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
01	48	50	54	54	46	43	47	79	105	130	135	133	126	121	117	116	113	108	105	78	67	68	59	56
02	55	55	57	51	44	40	38	70	96	122	128	131	126	119	122	125	125	120	101	89	79	73	68	63
03	60	56	F 57	U F 54	F 49	F 48	U F 52	80	103	121	126	130	124	120	124	122	119	120	107	90	78	76	69	F 68
04	63	F 57	59	61	60	58	48	67	95	112	125	130	132	130	126	124	118	118	111	100	91	83	U F 67	U F 56
05	U F 46	U F 42	U F 49	66	J F 56	U J 36	U F 39	F 66	100	110	120	128	130	130	123	120	123	116	113	88	83	67	56	53
06	47	F 40	F 40	F 45	F 45	49	50	63	84	103	120	130	127	135	134	127	120	115	102	90	82	71	66	62
07	55	59	U F 60	F 48	47	F 48	48	72	104	116	127	130	130	126	124	121	118	115	99	86	74	64	63	68
08	F 62	64	F 61	F 56	U F 49	U F 53	F 49	75	102	122	132	130	126	121	120	117	114	111	96	89	82	74	70	66
09	67	67	F 62	F 59	56	54	50	76	102	120	128	132	122	124	123	126	125	116	107	88	76	66	68	68
10	67	67	62	61	58	F 50	F 43	73	103	120	125	125	120	120	120	120	114	109	100	90	81	72	67	64
11	62	F 64	U F 58	F 57	F 58	F 58	58	83	105	121	132	130	127	130	132	127	122	117	111	84	82	76	66	F 61
12	57	60	62	F 58	62	F 60	F 54	79	103	130	112	132	130	128	126	123	120	119	104	86	86	80	68	62
13	56	53	F 59	62	F 62	F 56	F 43	F 62	72	80	100	111	123	120	111	121	124	126	110	90	75	68	61	60
14	59	58	F 55	U F 56	U F 56	F 57	U F 55	F 82	104	126	133	140	138	134	127	123	123	U F 115	102	90	84	67	60	U F 55
15	U F 54	U F 52	U F 56	U F 52	U F 48	U F 50	61	86	108	120	128	134	135	132	125	123	118	116	107	95	90	74	58	F 56
16	56	F 56	U F 52	U F 54	U F 56	U F 56	F 57	F 82	106	123	128	132	135	130	132	I C 130	128	120	107	87	77	71	F 68	67
17	F 65	62	61	F 57	56	56	55	82	101	115	124	128	128	132	130	130	125	125	109	103	92	89	78	70
18	F 68	F 72	F 71	72	71	67	68	91	113	125	137	140	141	142	137	139	132	137	118	102	95	80	67	F 60
19	58	F 50	U F 45	U F 48	F 56	58	68	100	113	125	131	142	144	141	140	138	143	132	102	78	77	F 64	U F 47	F 53
20	U F 50	U F 41	F 42	54	F 52	U F 48	U F 53	83	105	123	133	131	128	128	131	129	129	121	106	90	78	62	57	58
21	F 62	I C 63	U F 50	F 43	F 41	48	54	73	90	96	110	117	121	128	127	124	117	110	102	95	83	70	65	63
22	57	U F 43	U F 43	56	56	55	U F 57	83	106	112	122	130	122	125	126	123	122	122	110	91	81	62	62	58
23	58	55	48	42	40	U F 40	F 45	84	114	120	126	129	126	128	125	123	132	128	110	84	71	U F 56	U F 30	U F 34
24	U F 26	U F 29	U F 30	U F 30	F 31	U F 31	41	66	85	92	102	108	107	110	108	110	107	104	90	72	64	54	50	47
25	48	49	44	38	F 31	F 31	41	70	88	91	102	109	115	115	115	117	114	109	99	82	72	65	60	57
26	56	55	55	53	52	50	52	86	98	107	114	120	122	120	119	118	114	115	103	90	78	74	66	64
27	68	64	61	55	49	F 43	56	90	105	118	120	121	122	118	119	120	114	115	112	94	80	74	69	66
28	62	56	52	48	45	F 44	58	90	107	I C 112	117	128	127	128	I C 126	127	125	120	113	98	86	74	66	F 63
MED	58	56	56	54	52	50	52	80	103	120	126	130	126	128	125	123	121	116	106	90	80	71	66	62
NO	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 75
IONOSPHERIC DATA

foFI, 0.1 Mc, Feb, 1957 — 75° W Mean Time

Station Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01											L	L	L	L	L	L	L							
02												L	L	L										
03									L	L	L	L	L	L	L	L	L							
04										L	L	L	L	L	L	L	L							
05									L	L	L	L	L	L	L	L								
06										L	L	L	L	L	L	L								
07										L	L	L	L	L	L	L								
08										L	L	L	L	L	L	L	C							
09										L	L	L	L	L	L	L	L	L						
10											L	L	L	L	L	L	L							
11										L	L	L	L	L	L	L								
12										L	L	C	L	L	L	L								
13										L	L	L	L	L	L	L	L							
14											L	L	L	L	L									
15												L	L	L	A									
16										L	L	L	L	L	L	L								
17											L	L	L	L	L	L	L							
18											L	L	L	L	L	L	L							
19											L	L	L	L	L	L	L							
20											L	L	L	L	L	L	L							
21									L	L	37	L	L	L	L	L	L							
22										L	L	L	L	L	L	L	L							
23											L	L	R	L	L	L								
24											L	L	L	L	L	L								
25										L	L	L	L	L	L	L	L							
26											L	L	L	L	L	L	L							
27											L	L	L	L	L	L								
28											L	L	L	L	L	L								
MED																								
NO																								

TABLE 76
IONOSPHERIC DATA

foE, 0.05 Mc, Feb. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01									A	A	320	345	360	350	325	300	270							
02									215	275	330	355	355	350	335	310	255							
03									U B 215	H 290	H 325	U B 345	U B 340	U B 325	310	B	A							
04									225	295	320	340	B	B	B	B	B							
05									B	U B 275	305	320	340	U B 350	340	U B 320	275							
06									215	U B 275	320	B	B	B	H 350	H 310	270	200						
07									245	305	340	355	365	360	350	325	275	210						
08									235	300	335	365	H 370	H 370	U A 330	H 330	I C 290	195						
09									195	290	330	340	360	370	355	H 320	270	U B 205						
10									H 235	H 295	325	350	355	U A 365	I A 340	U H 320	265							
11									B	300	340	350	360	355	360	325	275	B						
12									B	290	330	I C 340	350	H 355	360	320	H 280	B						
13								B	B	270	320	340	I B 340	345	340	320	U A 285	B						
14									U B 250	U R 300	H 330	H 360	U A 360	H 370	350	320	270							
15									U B 250	U A 305	340	360	U R 370	U A 360	350	320	280	230						
16									245	310	340	355	370	365	350	320	H 280	190						
17									H 240	H 300	H 335	350	355	340	355	320	290	225						
18									245	300	330	350	365	I A 350	U A 340	320	280	225						
19								175	240	300	320	U R 335	U R 325	325	325	320	U A 280	220						
20								U A 180	235	295	320	340	360	360	345	325	295	A						
21								180	245	290	320	350	360	380	370	350	300	240						
22								190	275	300	340	370	U R 375	U R 375	345	330	310	220						
23								S	260	U R 310	U R 330	H 350	U R 380	I R 370	U R 360	R	R	R						
24								U R 210	U R 250	U R 295	320	I R 345	360	360	340	320	270	U R 220						
25								A	H 255	A	A	A	U R 340	U R 340	340	H 330	290	H 220						
26								B	H 260	I B 315	340	360	365	I R 360	U R 350	U R 340	290	U H 230						
27								B	U R 250	U R 300	R	R	R	B	R 345	330	300	230						
28								175	H 270	310	335	U R 340	I R 355	360	H 355	335	300	230						
MED								180	245	300	330	350	360	360	345	320	280	220						
NO								6	23	26	26	25	25	25	27	25	25	16						

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 77
IONOSPHERIC DATA

foEs, 0.1 Mc, Feb. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	S	S	S	E	S	S	S	35	66	57	G	G	G	G	G	G	29	22	B	B	S	S	S	B
02	S	S	S	S	B	S	S	S	G	37	42	40	40	G	G	G	G	B	S	B	S	S	B	B
03	19	S	S	S	S	S	S	B	G	G	35	G	G	34	33	30	26	B	B	S	S	35	25	S
04	S	S	S	S	B	B	31	B	G	G	G	35	B	35	31	31	B	B	B	S	57	S	S	S
05	S	S	S	S	S	S	S	S	B	29	32	34	B	B	35	33	28	B	B	S	B	S	S	B
06	S	41	S	33	S	S	S	S	G	28	G	B	B	33	G	G	G	G	S	S	S	S	S	S
07	S	S	E	E	S	24	S	S	G	G	G	G	G	G	G	G	G	G	S	B	S	S	S	36
08	S	S	S	S	S	S	S	S	G	G	G	G	G	G	35	G	C	G	S	B	S	S	30	B
09	S	S	S	S	S	S	B	B	G	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S
10	S	S	S	S	S	S	S	B	45	G	G	G	G	39	42	34	30	22	B	S	S	S	S	S
11	S	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	B	S	S	B	S	S	S
12	S	S	S	S	19	S	S	S	B	G	G	C	G	G	G	G	29	B	B	B	B	S	S	S
13	S	B	S	S	26	B	B	B	B	G	G	G	G	39	40	38	31	B	B	B	37	43	37	B
14	S	B	24	S	S	S	26	27	G	G	G	G	37	B	G	G	29	B	B	B	S	S	26	30
15	S	S	S	S	S	S	S	B	G	31	G	G	G	39	43	36	G	38	B	B	B	S	S	S
16	S	S	S	S	S	S	B	B	G	G	G	G	G	31	30	34	G	G	17	S	S	29	31	S
17	S	S	S	S	S	J 22	S	S	G	22	G	20	G	G	G	G	32	49	41	36	31	S	S	S
18	B	S	E	S	13	S	S	18	G	G	G	G	G	36	36	34	G	29	35	31	30	S	S	S
19	S	S	25	S	S	S	S	G	G	33	G	G	39	60	40	G	35	G	S	S	S	S	S	S
20	S	S	S	S	S	S	28	19	G	G	30	G	29	26	29	23	G	49	34	S	24	S	S	S
21	S	S	S	S	S	S	S	G	G	G	G	G	G	54	42	27	G	G	B	S	S	S	S	S
22	S	S	S	S	S	S	S	G	G	G	G	G	G	G	36	G	G	25	B	S	S	S	S	S
23	S	S	S	S	S	S	29	G	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S
24	37	S	S	S	S	S	S	S	S	S	S	S	G	G	G	G	G	G	B	S	S	S	S	S
25	S	S	S	E	E	S	S	51	24	41	35	34	G	S	S	S	S	26	23	S	S	S	S	S
26	S	S	S	S	S	S	S	B	G	B	G	G	G	G	G	G	G	G	17	S	S	S	S	S
27	S	S	S	S	E	S	S	B	G	G	G	G	G	B	G	G	G	G	S	S	S	S	S	S
28	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	26	S	S	S	S	S	S
MED							U 26														U 24		U 28	
NO	3	3	4	4	7	4	7	19	27	27	27	26	28	27	27	27	26	28	19	10	9	3	6	7

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 78

IONOSPHERIC DATA

fMIN, 0.1 Mc, Feb. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	E S 16	E S 16	E S 16	E	E S 15	E S 16	E S 16	E S 17	21	E S 16	21	25	21	21	26	23	23	20	20	17	E S 16	E S 16	E S 16	17
02	E S 16	E S 16	E S 16	E S 16	17	E S 16	E S 16	E S 16	22	23	27	27	26	28	29	23	23	23	E S 16	17	E S 16	E S 16	17	17
03	E S 16	E S 16	E S 13	E S 13	E S 13	E S 13	E S 13	17	25	25	26	27	28	32	28	27	23	25	17	E S 16	E S 16	E S 16	E S 16	E S 16
04	E S 16	E S 12	E S 13	E S 12	20	17	E S 16	17	20	24	26	29	39	33	30	30	35	26	22	E S 16	E S 16	E S 13	E S 16	E S 16
05	E S 16	E S 16	E S 11	E S 12	E S 13	E S 13	E S 16	E S 16	24	26	29	35	35	35	32	28	25	23	17	E S 16	17	E S 13	E S 16	18
06	E S 16	E S 13	E S 13	E S 16	E S 16	E S 15	E S 16	E S 16	17	23	29	38	39	31	28	25	20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
07	E S 16	E S 16	E	E	E S 11	E S 13	E S 15	E S 16	20	23	25	26	25	26	23	23	18	E S 16	E S 16	17	E S 16	E S 16	E S 16	E S 16
08	E S 16	E S 16	E S 13	E S 13	E S 13	E S 16	E S 16	E S 17	18	20	23	31	28	26	22	18	C	E S 16	E S 16	17	E S 16	E S 16	20	18
09	E S 16	E S 16	E S 16	E S 16	E S 16	E S 13	17	17	24	22	22	26	27	30	23	24	26	17	17	E S 16	E S 16	E S 16	E S 16	E S 16
10	E S 16	E S 16	E S 16	E S 11	E S 16	E S 14	E S 13	18	19	22	23	25	27	23	24	23	19	E S 16	17	E S 16	E S 16	E S 16	E S 16	E S 16
11	E S 16	E S 13	E S 13	E S 13	E S 12	E S 16	E S 16	E S 16	26	17	22	23	24	27	23	27	20	20	E S 16	E S 16	20	E S 16	E S 16	E S 16
12	E S 16	E S 13	E S 13	E S 14	E S 16	E S 13	E S 16	E S 16	25	23	26	C	26	27	30	23	22	26	23	18	18	E S 16	E S 16	E S 16
13	E S 16	17	E S 13	E S 12	21	21	17	22	24	24	26	26	39	36	26	26	25	26	17	21	E S 16	E S 15	E S 16	18
14	E S 16	17	E S 13	E S 13	E S 12	E S 11	E S 16	18	23	28	23	24	25	27	28	26	25	26	19	17	E S 16	E S 13	17	E S 16
15	E S 13	E S 13	E S 13	E S 13	E S 13	E S 16	E S 16	19	19	24	24	25	26	26	27	24	22	22	21	19	17	E S 16	E S 16	E S 16
16	E S 16	E S 13	E S 13	E S 11	E S 14	E S 14	18	18	20	23	26	27	31	23	25	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15
17	E S 16	E S 11	E S 13	E S 11	E S 13	E S 11	E S 13	E S 16	E S 16	17	23	18	26	25	22	22	20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
18	17	E S 14	E	E S 11	E	E S 16	E S 16	E S 16	E S 16	19	26	30	28	26	29	23	21	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
19	E S 16	E S 16	E S 13	E S 13	E S 16	E S 16	E S 16	18	E S 16	18	20	28	25	27	20	20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
20	E S 16	E S 16	E S 13	E S 16	E S 13	E S 13	E S 16	E S 16	E S 16	E S 16	18	17	18	17	E S 16	18	17	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
21	E S 16	E S 16	E S 16	E S 13	E S 13	E S 16	E 6 16	E S 16	17	17	18	E S 16	19	18	19	17	17	E S 16	23	E S 16	E S 16	E S 16	E S 16	E S 16
22	E S 16	E S 14	E S 13	E S 13	E S 13	E S 13	E S 16	E S 17	17	E S 16	19	23	25	26	20	21	E S 16	17	19	E S 16	E S 16	E S 16	E S 16	E S 16
23	E S 16	E S 16	E S 16	E S 13	E S 13	E S 16	E S 16	E S 16	E S 16	16	23	23	34	28	25	23	18	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
24	E S 15	E S 16	E S 16	E S 13	E S 16	E S 16	E S 13	E S 15	E S 16	16	22	20	27	30	25	26	20	16	17	E S 13	E S 16	E S 16	E S 16	E S 16
25	E S 16	E S 11	E S 12	E	E	E S 13	E S 16	E S 16	E S 16	17	22	25	24	25	E S 25	21	22	E S 16	E S 16	E S 16	E S 16	E S 15	E S 15	E S 16
26	E S 16	E S 15	E S 16	E S 16	E S 17	E S 15	E S 15	18	E S 16	38	21	26	26	32	37	24	23	18	E S 16	E S 16	E S 16	E S 16	E S 17	E S 16
27	E S 16	E S 16	E S 16	E S 15	E	E S 13	E S 16	21	E S 16	21	19	22	22	38	27	26	25	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
28	E S 16	E S 16	E S 13	E S 16	E S 16	E S 13	E S 16	E S 16	E S 16	E S 16	16	18	17	16	16	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
MED																								
NO																								

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 79
IONOSPHERIC DATA

h'F2, Km, Feb. 1957 — 75° W Mean Time

Station: Woshington, D.C Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01											L	L	250	L	L	L	L							
02												L	L	L										
03									225	240	250	H 250	U L 240	L	L	L	L							
04										L	L	L	260	L	L	L	L							
05										L	240	L	250	250	240	240								
06										240	260	250	245	L	240	240								
07										L	250	245	U L 240	260	245	250								
08										240	245	250	245	L	260	U L 260	C							
09										L	L	L	L	L	L	L	L	L						
10											245	240	245	250	L	L	L							
11										250	L	260	240	240	L	L								
12										L	L	C	L	L	L	L								
13										L	L	L	U L 260	L	L	L	L							
14											230	U L 250	240	240	240									
15												U L 250	U L 240	U L 240	240									
16										230	240	U L 240	L	L	L	L								
17											L	L	L	L	L	L	L							
18											L	L	L	L	L	L	L							
19											240	L	250		L	250	L							
20											245	250	260	L	L	250	L							
21									245	240	235	240	240	245	245	245	245							
22										240	230	245	250	250	255	250	235							
23											U L 240	240	240	255	260	255								
24											U L 270	U L 270	265	270	265	U L 260	255							
25										245	L	275	250	L	240	250	L							
26											235	U L 250	250	U L 250	L	U L 260	L							
27											240	U L 240	240	U L 240	280	L								
28											225	U L 260	U L 250	L	L	L								
MED										U 240	240	250	250	250	245	250								
NO									2	8	17	18	22	12	12	12	3							

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 80
IONOSPHERIC DATA

h'F, Km, Feb. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Lang. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	245	275	275	245	260	260	275	275	U A 245	220	235	230	225	230	230	235	245	240	230	210	240	265	250	260
02	270	270	270	260	240	260	260	270	230	240	230	235	235	220	240	240	230	230	220	225	225	250	240	250
03	240	250	260	250	250	270	270	240	220	230	215	215	235	215	230	240	240	245	220	220	240	240	260	245
04	235	250	280	280	290	250	225	240	230	240	225	240	215	230	230	240	240	240	240	230	U A 270	260	275	290
05	340	350	315	300	270	260	F 300	F 250	250	230	225	235	225	230	235	235	240	240	235	210	240	230	230	250
06	250	U A 300	290	330	290	305	280	250	245	235	230	235	220	U B 230	225	230	230	230	225	220	230	230	245	240
07	240	245	250	260	270	270	265	240	240	230	230	230	230	240	230	235	235	240	235	230	230	240	260	U A 300
08	265	260	265	260	270	270	250	245	235	235	230	225	220	230	200	220	I C 230	235	230	235	250	240	260	270
09	270	265	260	255	260	250	250	240	230	230	230	240	215	225	220	240	240	230	230	220	240	225	245	250
10	250	250	250	250	260	250	225	240	225	235	230	230	225	215	220	235	230	240	230	220	235	240	250	250
11	280	280	265	265	280	250	240	240	230	220	230	225	230	220	230	230	235	235	240	220	250	250	240	250
12	270	320	280	290	270	255	245	245	230	230	230	I C 230	230	220	230	230	245	240	235	225	250	240	230	240
13	270	320	340	325	320	250	260	290	250	240	245	230	230	225	235	245	240	240	225	225	240	260	260	265
14	270	270	270	280	270	270	250	235	225	230	225	215	225	220	230	235	230	230	225	230	230	225	235	260
15	260	280	290	280	270	310	300	240	235	230	225	225	220	230	A	230	235	240	230	230	235	230	230	260
16	260	280	290	280	300	280	260	240	230	225	220	220	220	225	230	235	235	225	230	225	230	250	245	260
17	250	240	260	250	260	270	240	230	225	230	230	230	230	235	230	240	240	250	230	245	235	240	250	230
18	250	275	265	265	275	260	250	240	230	230	225	225	240	215	240	240	235	240	235	230	220	220	240	240
19	270	270	265	300	315	285	260	245	240	235	230	225	220	U A 240	235	235	245	235	220	230	245	265	270	300
20	275	245	270	290	255	250	250	255	235	235	230	220	225	225	235	235	240	230	235	220	245	235	280	315
21	340	295	285	310	335	330	290	260	240	220	205	210	215	220	230	230	235	245	240	250	250	245	255	270
22	260	255	320	290	270	265	240	230	245	230	225	230	230	230	225	235	E R 235	235	235	220	235	240	250	260
23	270	290	300	275	280	290	260	250	235	240	230	210	I R 220	230	230	240	240	230	245	240	240	330	E S 450	U F 450
24	F	F 430	F 440	F 410	F 380	330	330	280	250	235	240	240	235	235	235	235	235	240	235	230	235	250	260	285
25	E S 300	270	260	260	280	300	E S 290	270	245	235	235	235	230	240	235	230	240	235	225	225	U S 230	U S 290	260	260
26	270	275	275	S 270	260	250	245	240	240	240	220	220	230	240	225	235	230	240	225	230	230	260	260	260
27	290	260	245	245	240	260	290	250	230	225	E R 220	225	225	220	220	230	240	240	235	220	225	235	250	250
28	240	250	240	250	260	260	260	235	230	220	205	230	235	225	225	225	235	230	220	225	220	230	E S 240	E S 250
MED	270	270	270	270	270	260	260	240	235	230	230	230	225	230	230	235	235	240	230	225	235	240	250	260
NO	26	28	28	28	28	28	27	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	27	28

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 81

IONOSPHERIC DATA

h'E, Km, Feb. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01									A	A	119	119	115	115	113	113	121							
02									119	121	121	119	115	119	119	113	119							
03									U B 125	H 119	H 115	U B 119	U B 119	U B 117	U B 115	I B 113	111							
04									U B 125	U B 119	U B 119	111	B	B	B	B	B							
05									B	U B 119	U B 121	U B 119	U B 119	U B 129	U B 115	U B 119	U B 119							
06									U B 125	U B 121	U B 121	B	B	B	H 115	H 111	115	121						
07									131	123	127	119	119	117	117	113	111	121						
08									115	115	109	119	H 115	H 111	111	H 111	I C 115	119						
09									111	115	115	119	117	119	111	H 111	119	U B 121						
10									H 119	U B 119	111	111	U B 115	111	U B 111	111	111							
11									U B 109	105	119	115	109	119	115	119	119	B						
12									B	119	119	I C 119	119	H 119	119	119	H 119	B						
13								B	B	121	121	115	U B 111	115	119	U B 119	U B 119	B						
14									B	E B 117	H 105	H 101	E A 119	E B 119	115	113	E B 119							
15									U B 111	I A 110	109	U B 111	U B 115	U B 111	111	111	111	E B 130						
16									119	115	119	119	119	U A 119	119	119	H 113	119						
17									H 119	H 119	H 115	115	U B 113	111	111	113	119	119						
18									111	111	111	115	119	U B 111	U B 119	115	111	119						
19								U S 119	117	111	111	111	111	117	113	115	117	119						
20								E S 125	111	115	I A 112	109	U A 119	U A 117	U A 119	U A 115	115	A						
21									119	115	107	103	101	101	E A 123	E A 119	E A 119	107	119					
22									219	119	109	E B 109	E B 111	E B 117	E B 115	E B 109	E B 117	119	121					
23								S	U A 130	111	111	109	111	119	111	109	115	115						
24									111	109	109	109	109	115	115	115	117	115	119					
25								A	E A 129	I A 121	113	111	109	109	115	H 115	115	119						
26								B	H 111	I B 111	111	115	115	E B 121	105	115	115	121						
27								B	H 115	109	109	109	111	I B 113	115	111	111	119						
28								E S 135	H 115	109	105	105	105	105	105	109	109	115						
MED									116	115	112	115	115	115	115	113	115	119						
NO								4	22	26	28	27	24	23	26	25	26	16						

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 82

IONOSPHERIC DATA

h'Es, Km, Feb. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Lang. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	S	S	S	E	S	S	S	109	109	109	G	G	G	G	G	G	129	115	B	B	S	S	S	B
02	S	S	S	S	B	S	S	S	G	150	135	139	139	G	G	G	G	B	S	B	S	S	B	B
03	109	S	S	S	S	S	S	B	G	G	125	G	G	115	119	111	115	B	B	S	S	130	111	S
04	S	S	S	S	B	B	119	B	G	G	G	130	B	115	115	119	B	B	B	S	121	S	S	S
05	S	S	S	S	S	S	S	S	B	119	119	129	B	B	119	119	119	B	B	S	B	S	S	B
06	S	125	S	113	S	S	S	S	G	125	G	B	B	119	G	G	G	G	S	S	S	S	S	S
07	S	S	E	E	S	125	S	S	G	G	G	G	G	G	G	G	G	G	S	B	S	S	S	105
08	S	S	S	S	S	S	S	S	G	G	G	G	G	G	119	G	C	G	S	B	S	S	103	B
09	S	S	S	S	S	S	B	B	G	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S
10	S	S	S	S	S	S	S	B	105	G	G	G	G	121	115	125	119	111	B	S	S	S	S	S
11	S	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	B	S	S	B	S	S	S
12	S	S	S	S	115	S	S	S	B	G	G	C	G	G	G	G	139	B	B	B	B	S	S	S
13	S	B	S	S	119	B	B	B	B	G	G	G	G	129	119	113	115	B	B	B	109	105	105	B
14	S	B	109	S	S	S	111	110	G	G	G	G	105	B	G	G	119	B	B	B	S	S	107	103
15	S	S	S	S	S	S	S	B	G	119	G	G	G	115	111		G	121	B	B	B	S	S	S
16	S	S	S	S	S	S	B	B	G	G	G	G	G	101	101	101	G	G	119	S	S	109	103	S
17	S	S	S	S	S	119	S	S	G	103	G	103	G	G	G	G	131	119	115	109	111	S	S	S
18	B	S	E	S	119	S	S	111	G	G	G	G	G	115	119	135	G	119	109	109	109	S	S	S
19	S	S	150	S	S	S	S	G	G	135	G	G	117	115	119	G	129	G	S	S	S	S	S	S
20	S	S	S	S	S	S	119	119	G	G	109	G	103	101	101	101	G	113	111	S	111	S	S	S
21	S	S	S	S	S	S	S	G	G	G	G	G	G	101	101	101	G	G	B	S	S	S	S	S
22	S	S	S	S	S	S	S	G	G	G	G	G	G	G	119	G	G	123	B	S	S	S	S	S
23	S	S	S	S	S	S	111	G	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S
24	130	S	S	S	S	S	S	S	S	S	S	S	G	G	G	G	G	G	B	S	S	S	S	S
25	S	S	S	E	E	S	S	109	109	107	109	109	S	S	S	S	S	131	117	S	S	S	S	S
26	S	S	S	S	S	S	S	B	G	B	G	G	G	G	G	G	G	G	115	S	S	S	S	S
27	S	S	S	S	E	S	S	B	G	G	G	G	G	B	G	G	G	G	S	S	S	S	S	S
28	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	119	S	S	S	S	S	S
MED								110		119	119	129		115	119	113	119	119	115		111		105	
NO	2	1	2	1	3	2	4	5	3	8	5	5	4	11	13	9	9	9	6	2	5	3	5	2

TABLE 83
IONOSPHERIC DATA

(M3000)F2, Feb. 1957 — 75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Lang. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	295	280	285	320	300	295	285	300	280	305	315	300	295	290	285	285	290	295	300	300	290	280	300	280
02	280	285	295	290	300	280	280	290	330	320	310	305	295	285	280	280	285	285	295	285	285	280	290	290
03	300	290	U F 300	F 290	F 270	F 290	F 290	F 295	330	320	310	305	285	290	285	290	280	295	290	295	280	280	280	280
04	290	285	F 275	270	270	285	310	290	300	310	295	290	295	280	285	280	275	290	290	280	280	275	260	U F 260
05	U F 260	U F 260	U F 270	250	260	U F 280	U F 280	F 290	315	310	300	295	295	295	290	290	290	300	295	300	315	315	300	285
06	290	F 290	F 270	F 280	F 270	F 270	270	300	320	305	310	300	300	300	295	300	295	300	300	300	295	300	305	300
07	295	290	F 295	F 290	F 290	F 290	F 295	F 320	335	330	320	310	305	300	290	290	290	295	305	300	295	295	280	275
08	285	F 295	280	F 295	F 295	U F 300	F 310	310	325	315	305	305	300	295	290	290	C	290	300	295	290	295	285	270
09	275	280	285	F 280	280	285	310	300	330	310	295	305	300	285	285	280	290	295	295	300	285	280	270	270
10	280	295	295	285	295	305	320	310	320	320	315	300	300	290	290	290	295	300	300	290	300	300	295	270
11	270	F 270	F 280	F 280	U F 275	F 280	F 290	320	330	315	310	295	290	280	285	285	290	295	300	315	290	300	290	275
12	260	250	265	F 265	U F 270	280	300	U F 295	320	310	310	C	295	285	280	280	285	295	300	290	270	300	305	275
13	275	250	F 260	250	265	F 300	F 290	F 290	F 310	320	300	285	280	290	280	270	280	290	300	295	290	280	275	275
14	280	275	280	U F 280	U F 275	F 280	U F 290	U F 300	325	320	320	310	305	295	300	295	295	310	310	305	310	310	290	295
15	U F 290	U F 285	U F 290	U F 280	U F 290	U F 280	270	315	320	320	300	305	300	290	290	285	290	290	305	300	300	315	300	F 300
16	F 290	F 280	U F 290	U F 280	U F 270	U F 280	F 300	F 330	330	325	310	300	295	285	285	285	295	295	300	300	290	290	275	280
17	F 300	280	F 290	F 300	280	285	300	310	325	320	300	290	285	280	280	275	280	285	290	290	295	290	290	280
18	F 275	F 280	F 275	F 260	270	270	280	310	310	315	300	300	295	290	285	285	285	290	295	300	300	290	300	F 280
19	F 290	F 280	U F 290	U F 265	U F 275	265	270	310	330	315	315	300	290	290	290	290	285	290	315	300	290	290	U F 310	U F 285
20	F 305	U F 320	U F 290	U F 300	285	F 285	U F 310	U F 340	320	315	305	305	300	295	285	290	295	300	305	305	295	290	280	250
21	F 255	270	290	U F 255	F 245	F 245	260	300	320	310	305	295	290	285	290	290	295	285	285	275	285	270	F 290	F 280
22	F 290	U F 300	U F 285	U F 295	U F 285	F 315	F 295	F 320	320	305	305	295	305	295	295	290	295	305	305	300	300	320	280	285
23	270	265	270	300	315	U F 290	U F 290	320	320	320	320	300	295	295	280	275	270	290	280	290	255	J F 255	F	F
24	F	U F 230	U F 230	U F 240	U F 250	U F 250	F 260	300	300	315	300	295	295	295	290	290	300	290	300	300	290	285	280	280
25	270	290	285	F 290	F 280	F 280	F 280	315	315	320	310	305	290	295	290	290	295	300	300	310	295	295	285	285
26	275	285	280	F 285	295	295	305	320	330	325	310	300	295	290	290	290	295	295	300	310	300	290	290	265
27	270	290	290	F 300	290	F 300	F 295	330	320	315	315	300	290	290	295	290	295	295	300	310	305	300	300	295
28	295	300	300	300	295	F 290	F 305	330	325	320	310	300	290	290	290	290	290	300	260	305	305	310	295	285
MED	280	280	285	280	280	285	290	310	320	315	310	300	295	290	290	290	290	295	300	290	290	290	290	280
NO	27	28	28	28	28	28	28	28	28	28	28	27	28	28	28	28	27	28	28	28	28	28	27	27

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 84

IONOSPHERIC DATA

(M3000)F1, Feb. 1957 — 75° W Mean Time

Station: Washington, D C. Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01											L	L	L	L	L	L	L							
02												L	L	L										
03									L	L	L	L	L	L	L	L	L							
04										L	L	L	L	L	L	L	L							
05									L	L	L	L	L	L	L	L								
06										L	L	L	L	L	L	L								
07										L	L	L	L	L	L	L								
08										L	L	L	L	L	L	L	C							
09										L	L	L	L	L	L	L	L	L						
10											L	L	L	L	L	L	L							
11										L	L	L	L	L	L	L								
12										L	L	C	L	L	L	L								
13										L	L	L	L	L	L	L	L							
14											L	L	L	L	L									
15												L	L	L	A									
16										L	L	L	L	L	L	L								
17											L	L	L	L	L	L	L							
18											L	L	L	L	L	L	L							
19											L	L	L	L	L	L	L							
20											L	L	L	L	L	L	L							
21									L	L	425	L	L	L	L	L	L							
22										L	L	L	L	L	L	L	L							
23											L	L	R	L	L	L								
24											L	L	L	L	L	L								
25										L	L	L	L	L	L	L	L							
26											L	L	L	L	L	L	L							
27											L	L	L	L	L	L								
28											L	L	L	L	L	L								
MED																								
NO																								

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

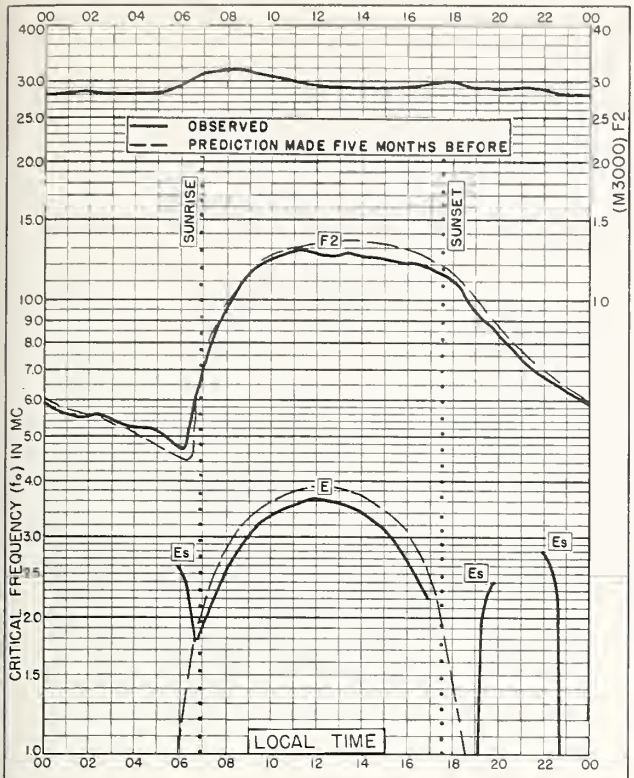


Fig. 1. WASHINGTON, D. C.
38.7°N, 77.1°W FEBRUARY 1957

NBS 503

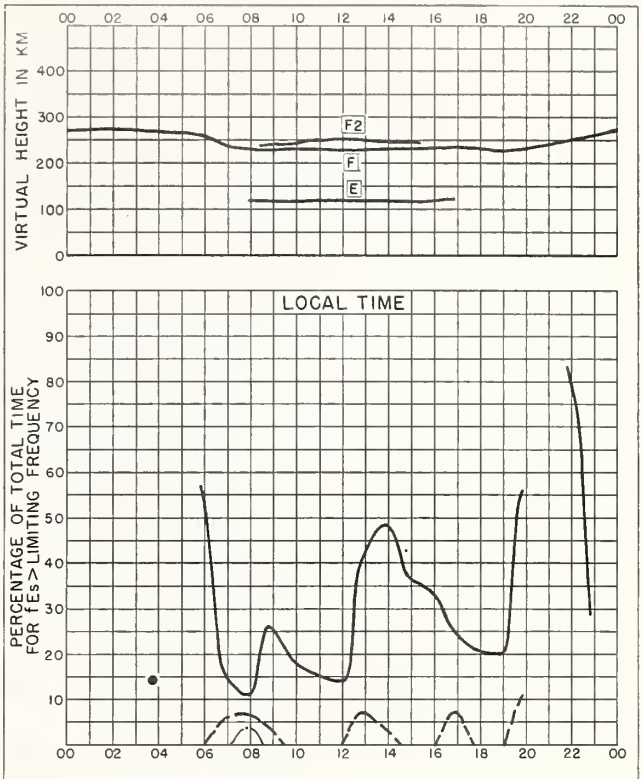


Fig. 2. WASHINGTON, D. C. FEBRUARY 1957

NBS 490

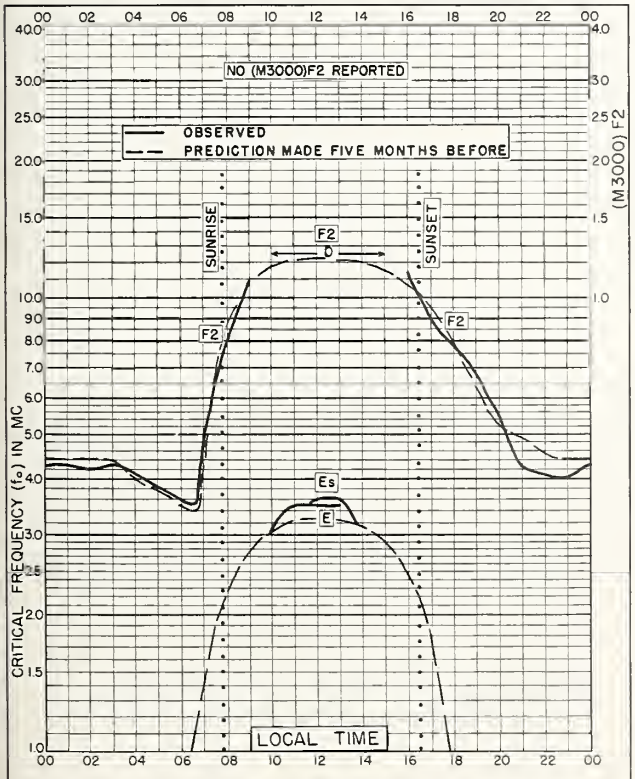


Fig. 3. GRAZ, AUSTRIA
47.1°N, 15.5°E JANUARY 1957

NBS 503

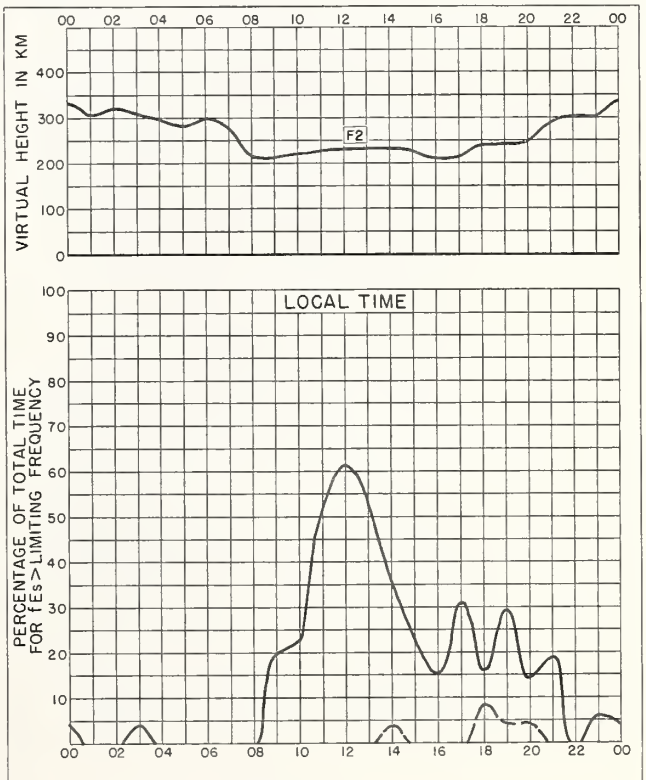


Fig. 4. GRAZ, AUSTRIA JANUARY 1957

NBS 490

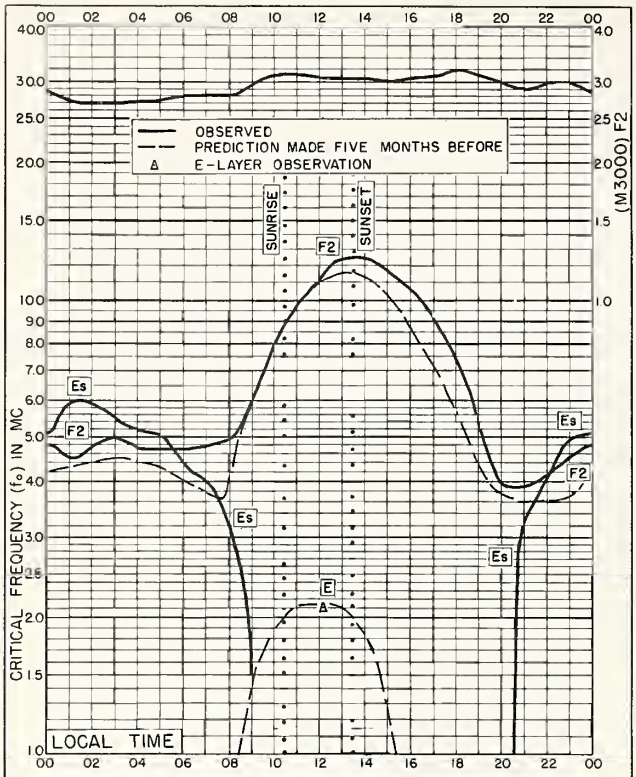


Fig. 5. FAIRBANKS, ALASKA
64.9°N, 147.8°W DECEMBER 1956

NBS 503

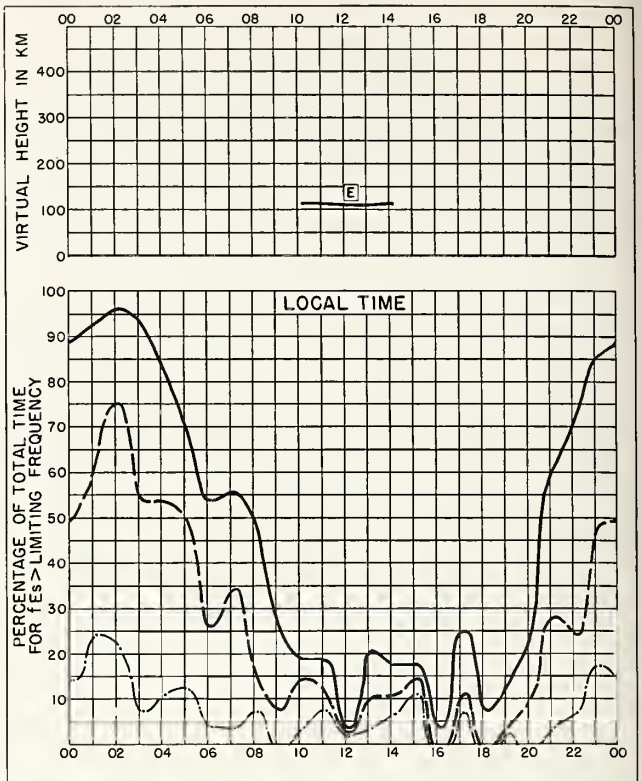


Fig. 6. FAIRBANKS, ALASKA DECEMBER 1956

NBS 490

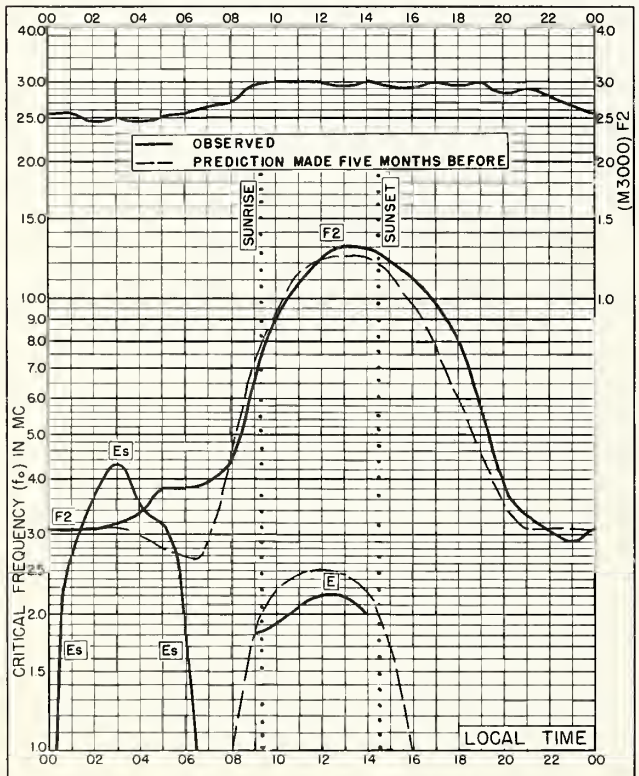


Fig. 7. ANCHORAGE, ALASKA
61.2°N, 149.9°W DECEMBER 1956

NBS 503

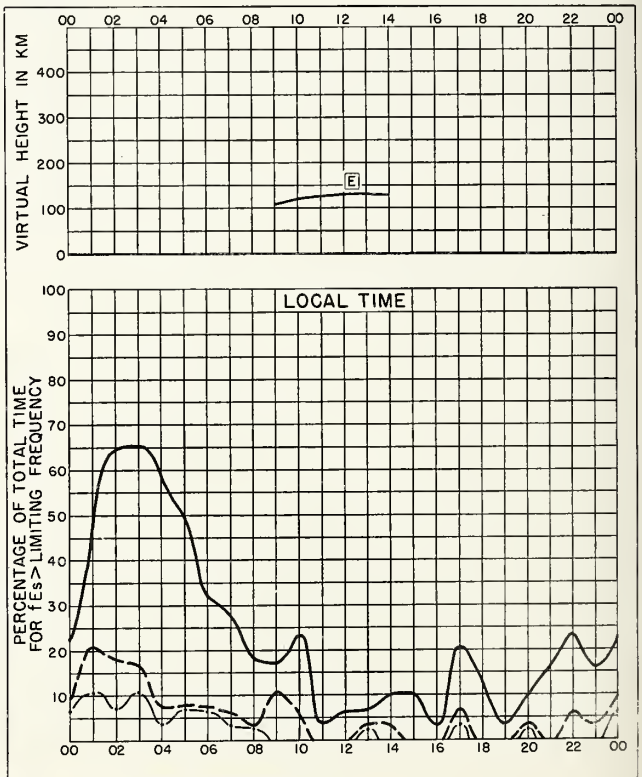


Fig. 8. ANCHORAGE, ALASKA DECEMBER 1956

NBS 490

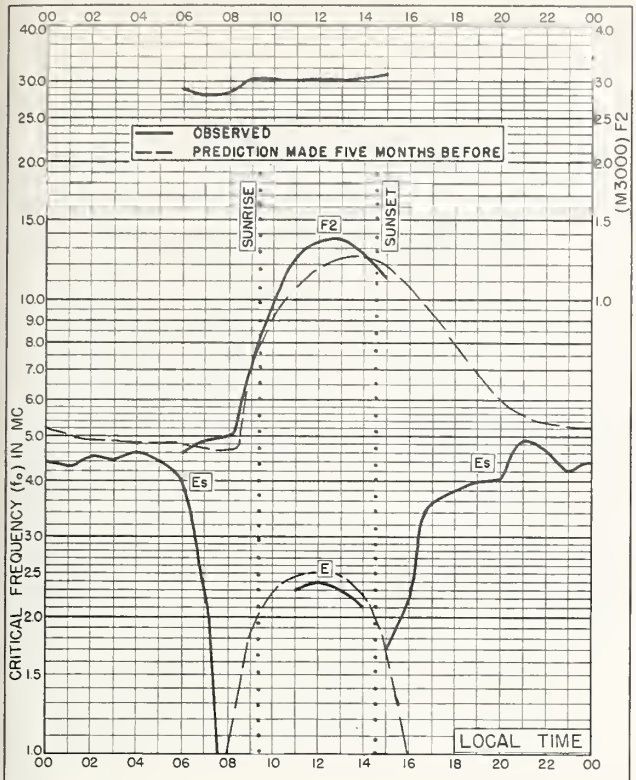


Fig. 9. NARSARSSUAK, GREENLAND
61.2°N, 45.4°W DECEMBER 1956

NBS 503

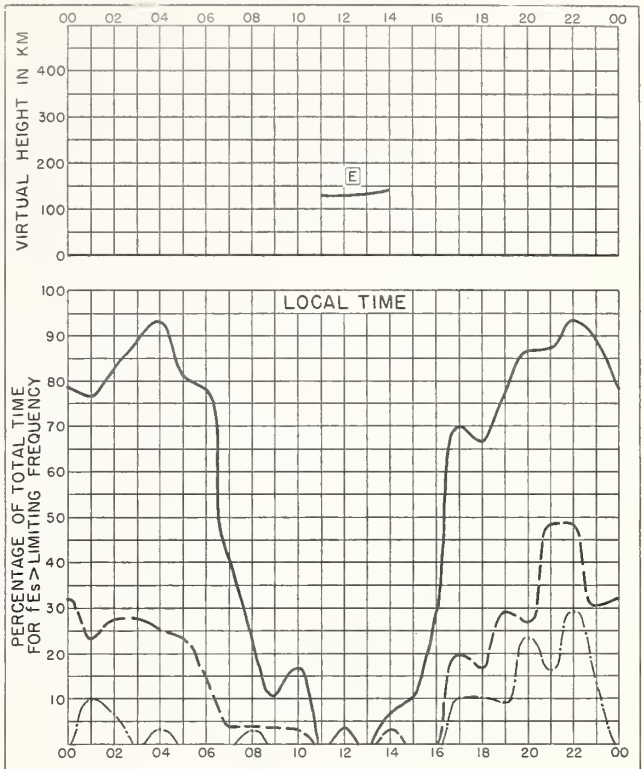


Fig. 10. NARSARSSUAK, GREENLAND DECEMBER 1956

NBS 490

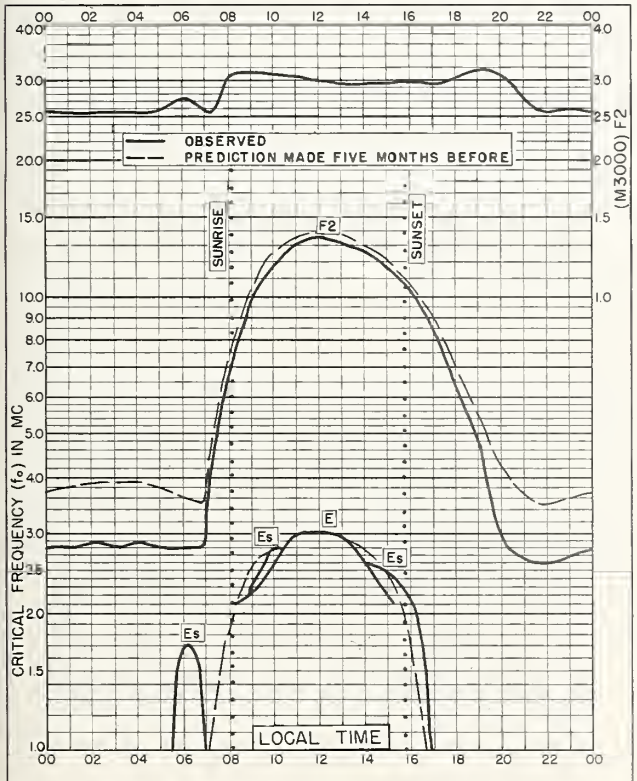


Fig. 11. ADAK, ALASKA
51.9°N, 176.6°W DECEMBER 1956

NBS 503

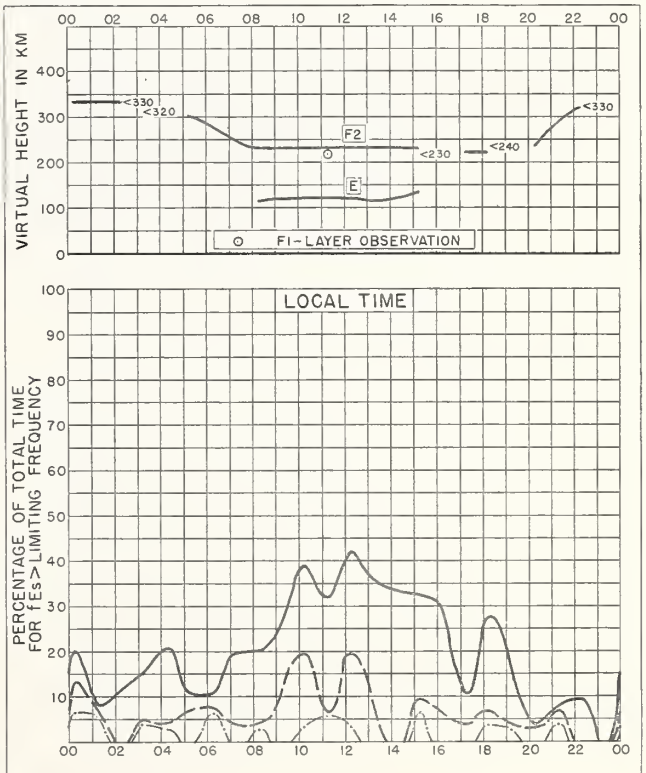


Fig. 12. ADAK, ALASKA DECEMBER 1956

NBS 490

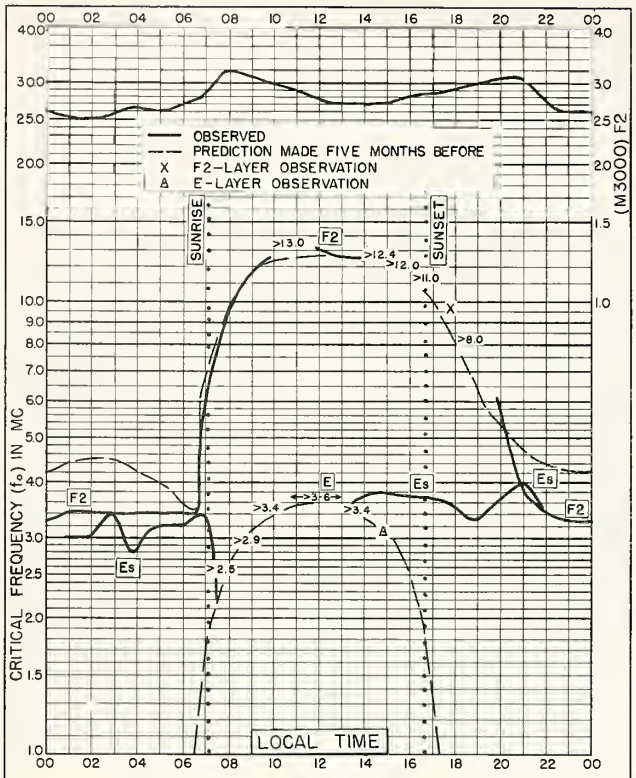


Fig. 13. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W DECEMBER 1956

NBS 503

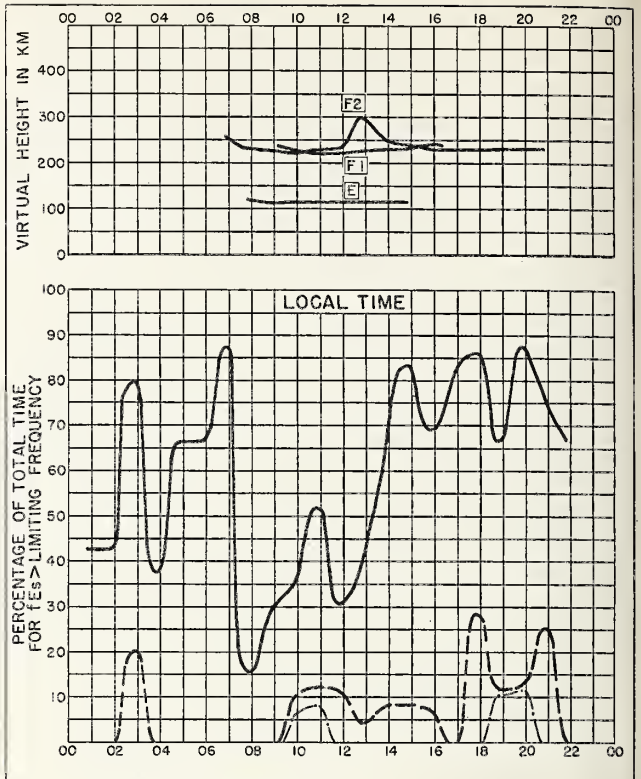


Fig. 14. SAN FRANCISCO, CALIFORNIA DECEMBER 1956

NBS 490

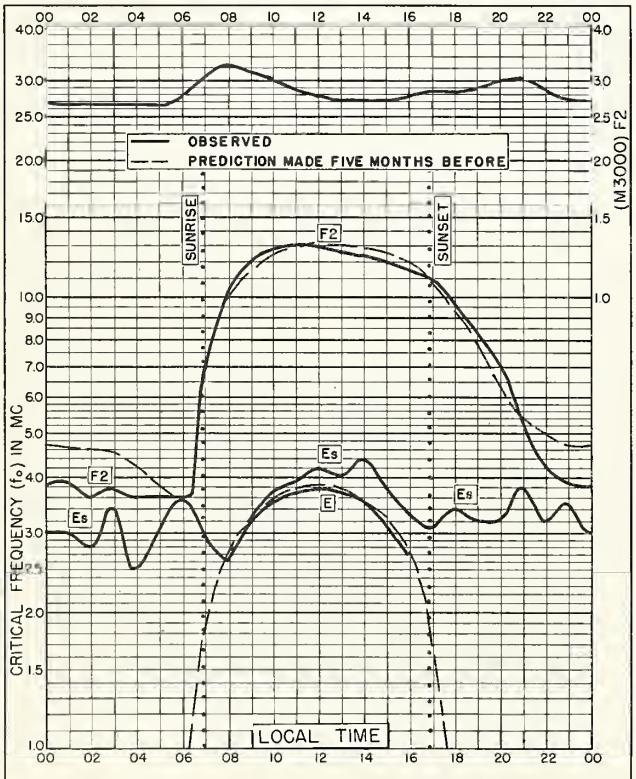


Fig. 15. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W DECEMBER 1956

NBS 503

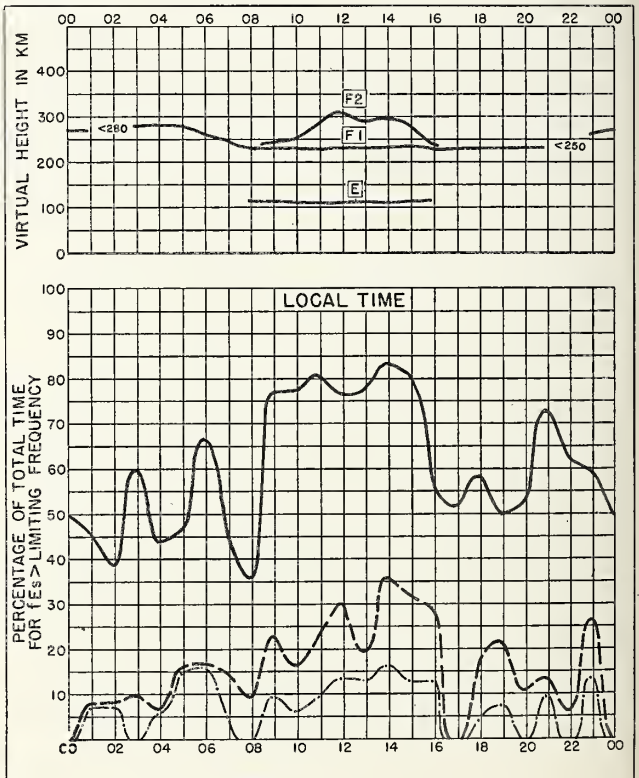


Fig. 16. WHITE SANDS, NEW MEXICO DECEMBER 1956

NBS 490

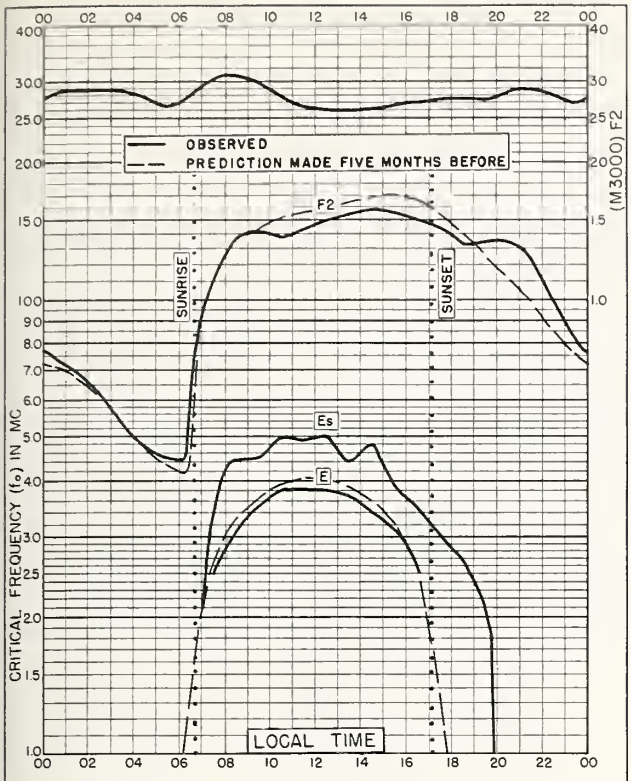


Fig. 17. OKINAWA I.
26.3°N, 127.8°E DECEMBER 1956

NBS 503

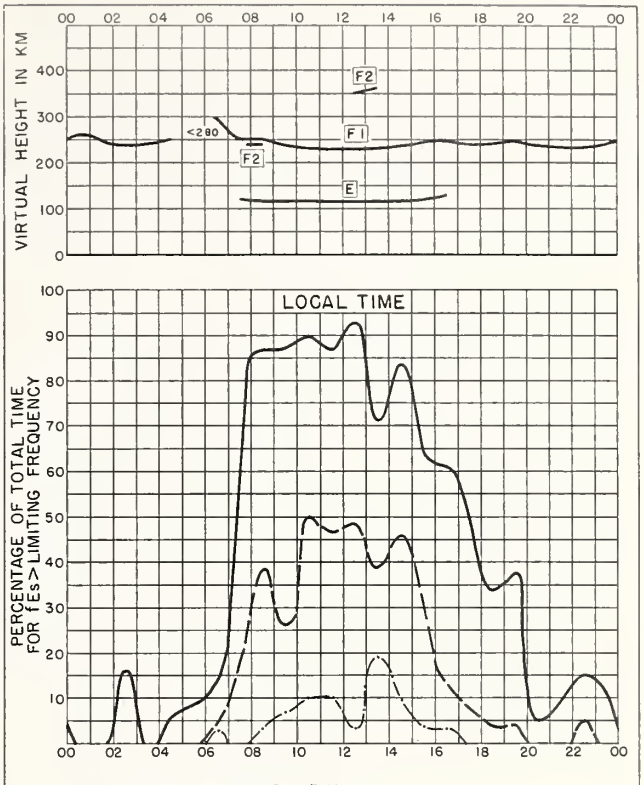


Fig. 18. OKINAWA I. DECEMBER 1956

NBS 490

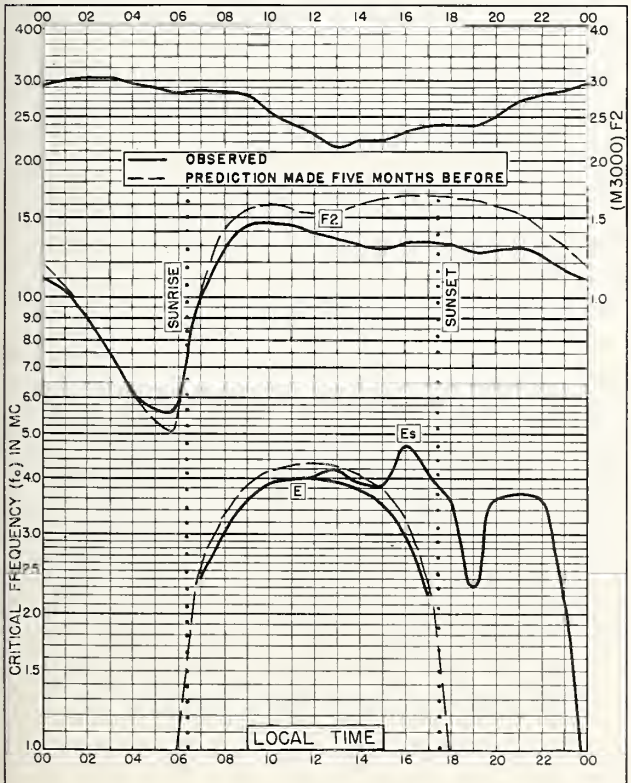


Fig. 19. BAGUIO, P. I.
16.4°N, 120.6°E DECEMBER 1956

NBS 503

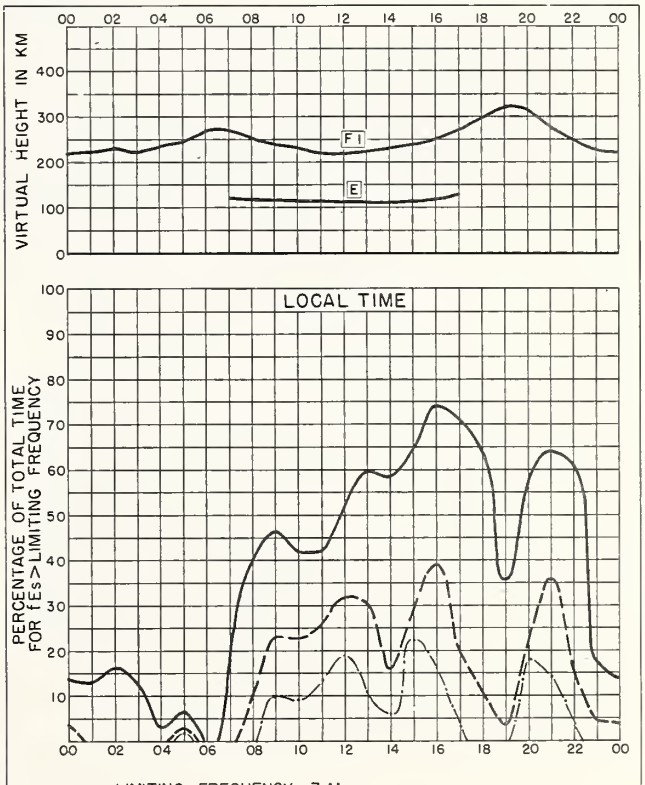


Fig. 20. BAGUIO, P. I. DECEMBER 1956

NBS 490

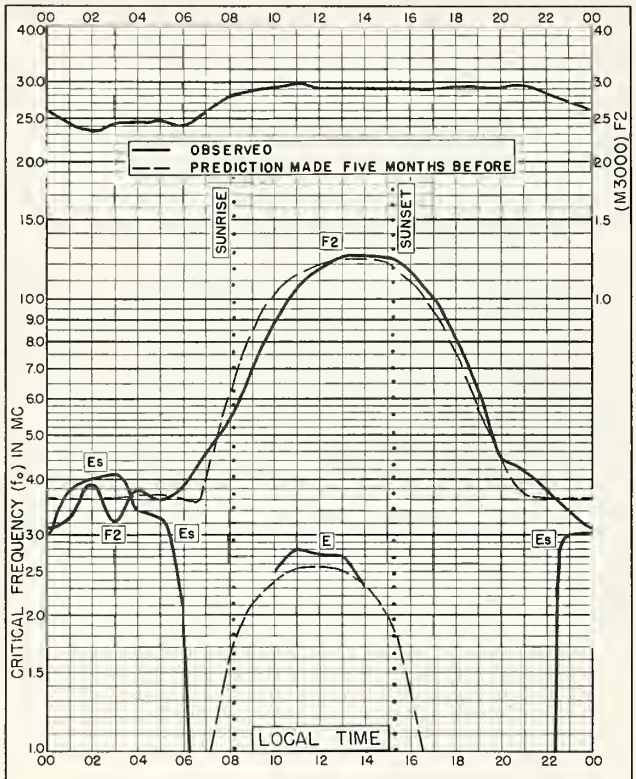


Fig. 21. ANCHORAGE, ALASKA
61.2°N, 149.9°W NOVEMBER 1956

NBS 503

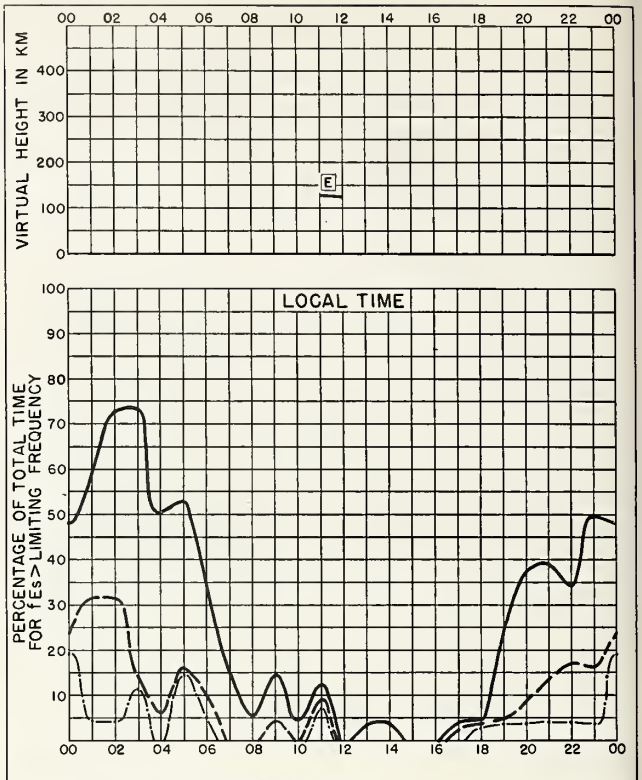


Fig. 22. ANCHORAGE, ALASKA NOVEMBER 1956

NBS 490

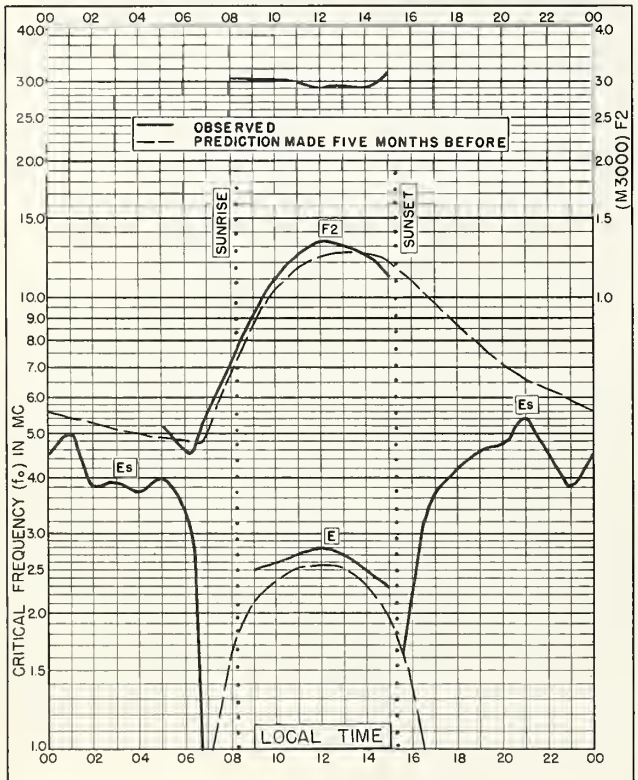


Fig. 23. NARSARSSUAK, GREENLAND
61.2°N, 45.4° W NOVEMBER 1956

NBS 503

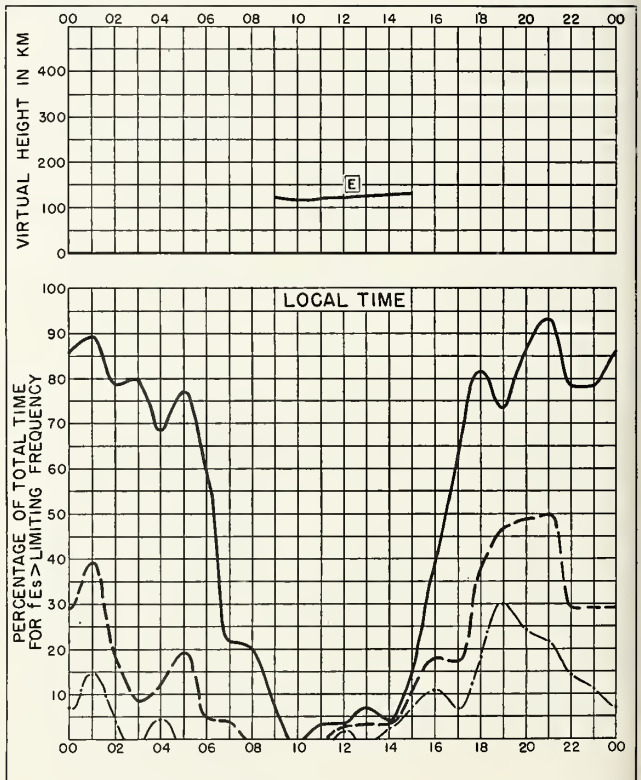


Fig. 24. NARSARSSUAK, GREENLAND NOVEMBER 1956

NBS 490

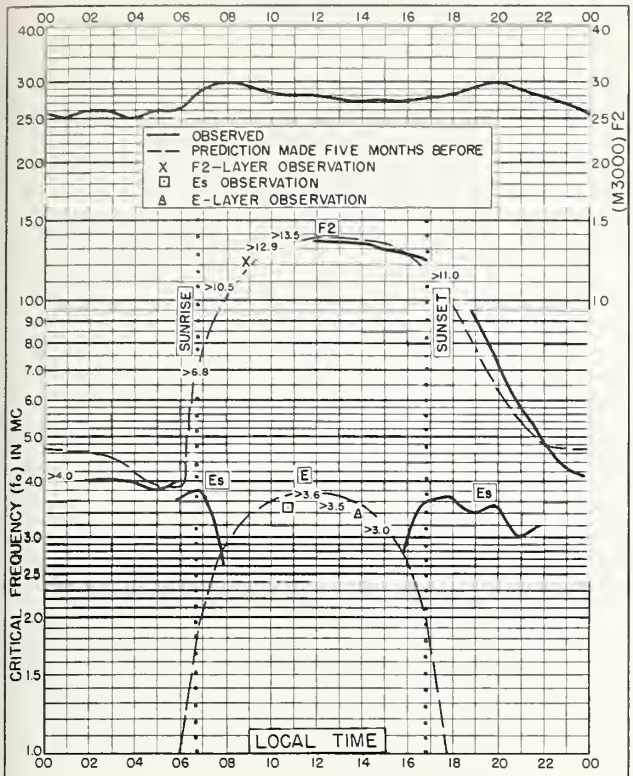
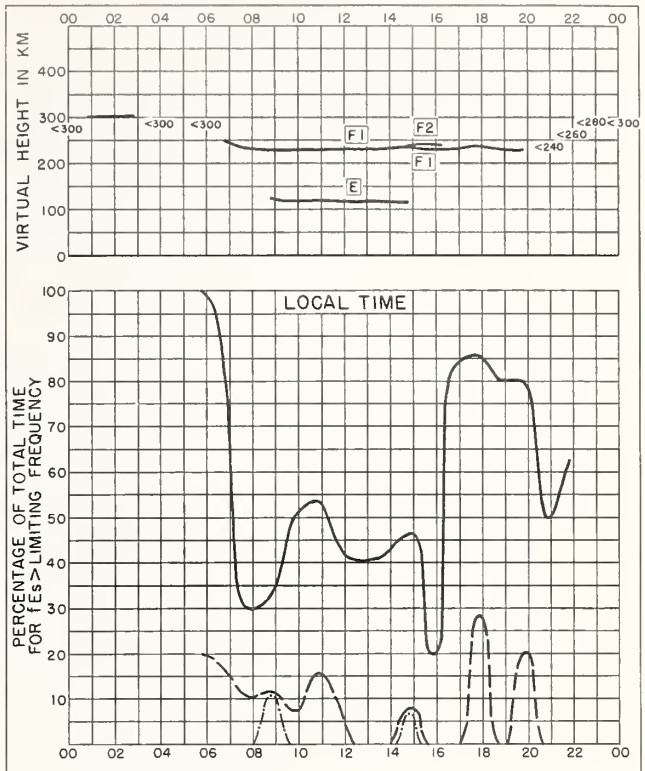


Fig. 25. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W NOVEMBER 1956

NBS 503



NOVEMBER 1956

Fig. 26. SAN FRANCISCO, CALIFORNIA

NBS 490

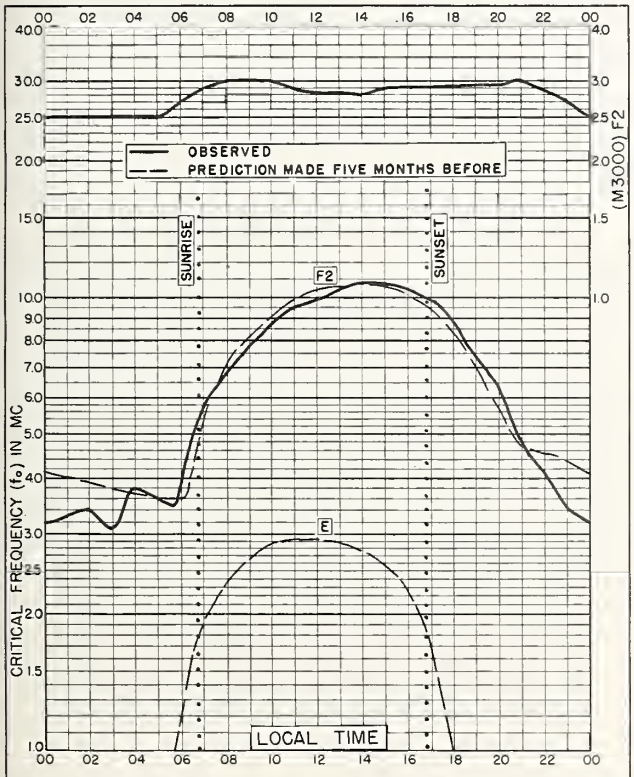


Fig. 27. ANCHORAGE, ALASKA
61.2°N, 149.9°W OCTOBER 1956

NBS 503

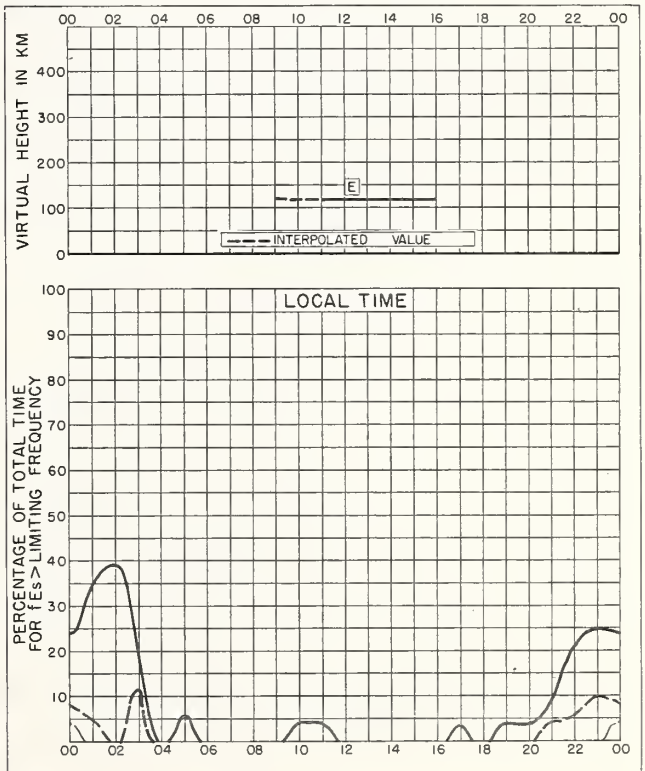


Fig. 28. ANCHORAGE, ALASKA OCTOBER 1956

NBS 490

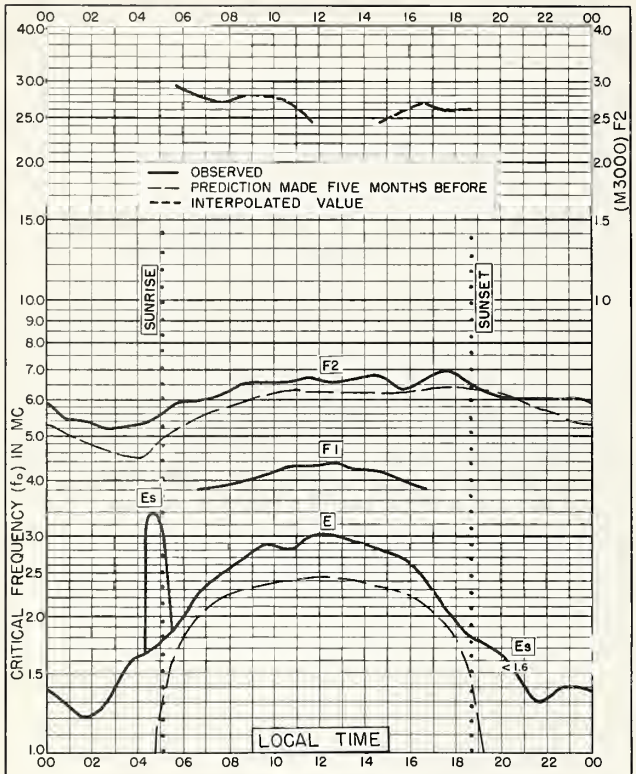
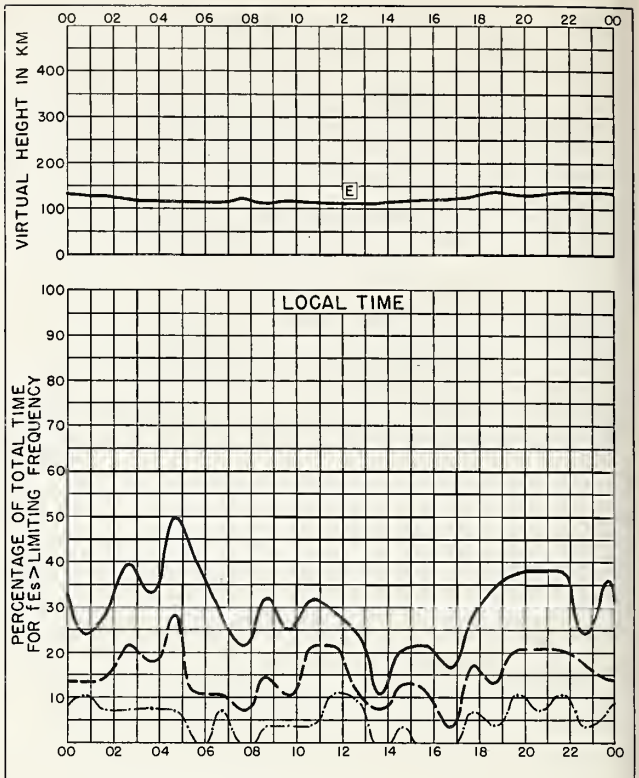


Fig. 29. RESOLUTE BAY, CANADA
74.7°N, 94.9°W SEPTEMBER 1956

NBS 503



SEPTEMBER 1956

Fig. 30. RESOLUTE BAY, CANADA

NBS 490

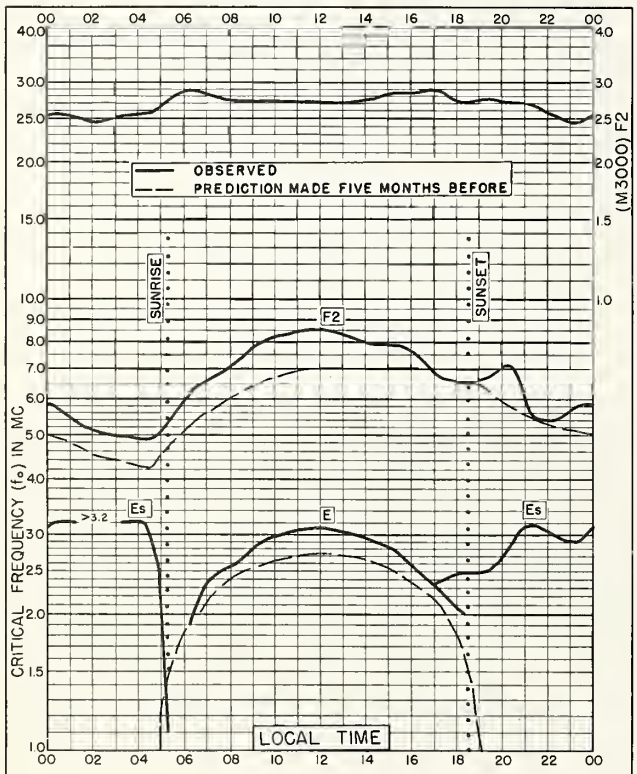


Fig. 31. TROMSO, NORWAY
69.7°N, 19.0°E SEPTEMBER 1956

NBS 503

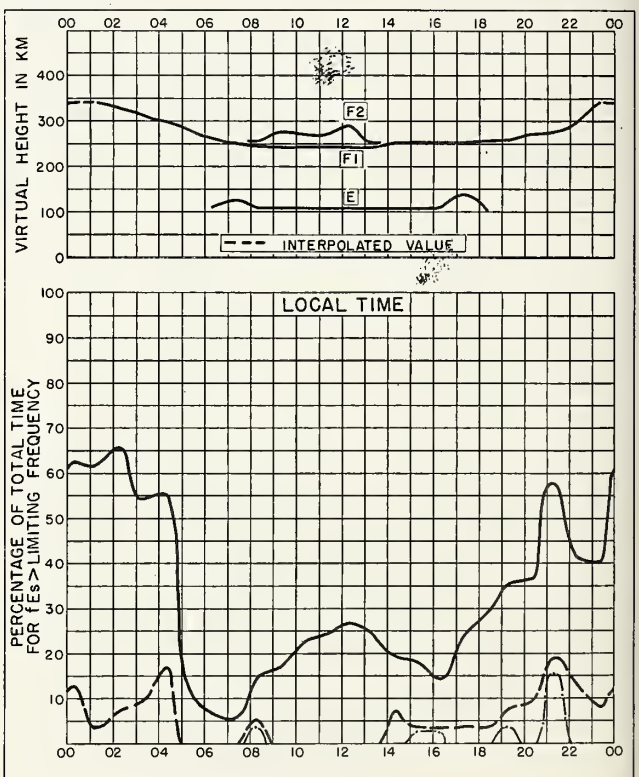


Fig. 32. TROMSO, NORWAY SEPTEMBER 1956

NBS 490

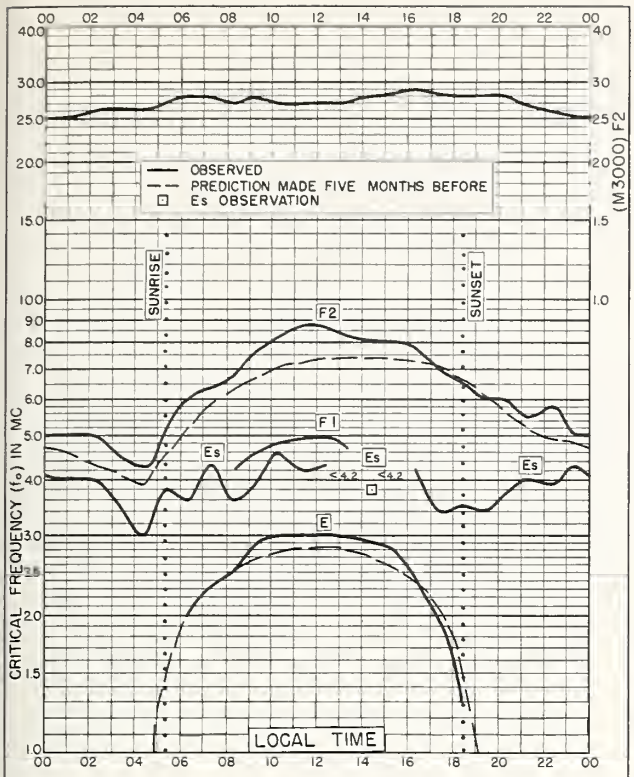


Fig. 33. KIRUNA, SWEDEN
67.8°N, 20.3°E SEPTEMBER 1956

NBS 503

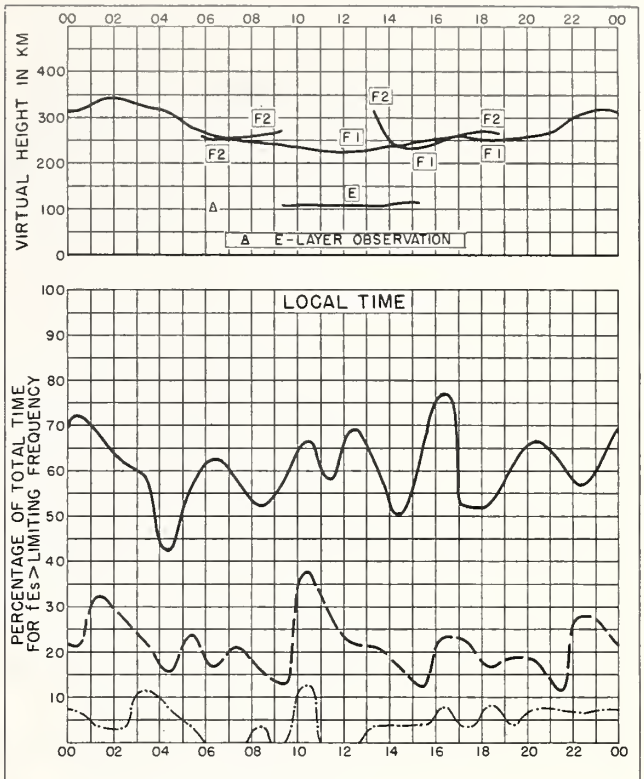


Fig. 34. KIRUNA, SWEDEN SEPTEMBER 1956

NBS 490

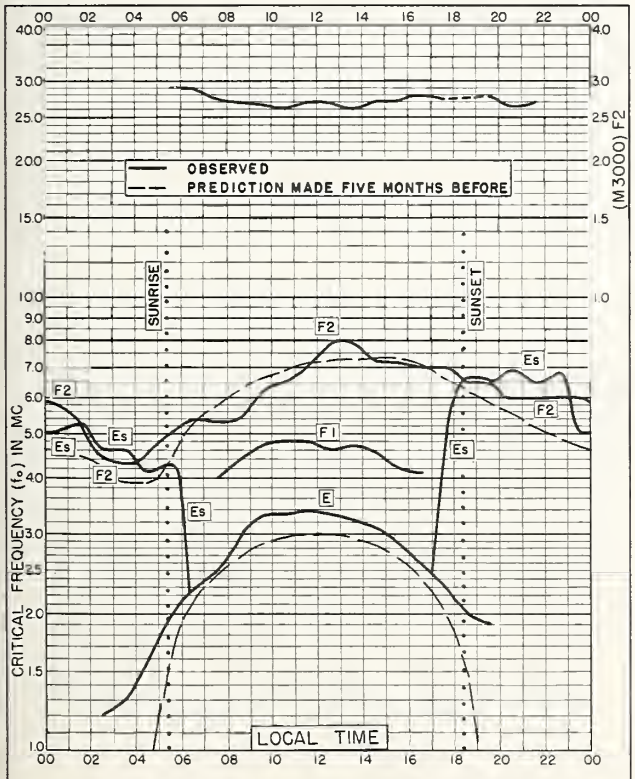


Fig. 35. BAKER LAKE, CANADA
64.3°N, 96.0°W SEPTEMBER 1956

NBS 503

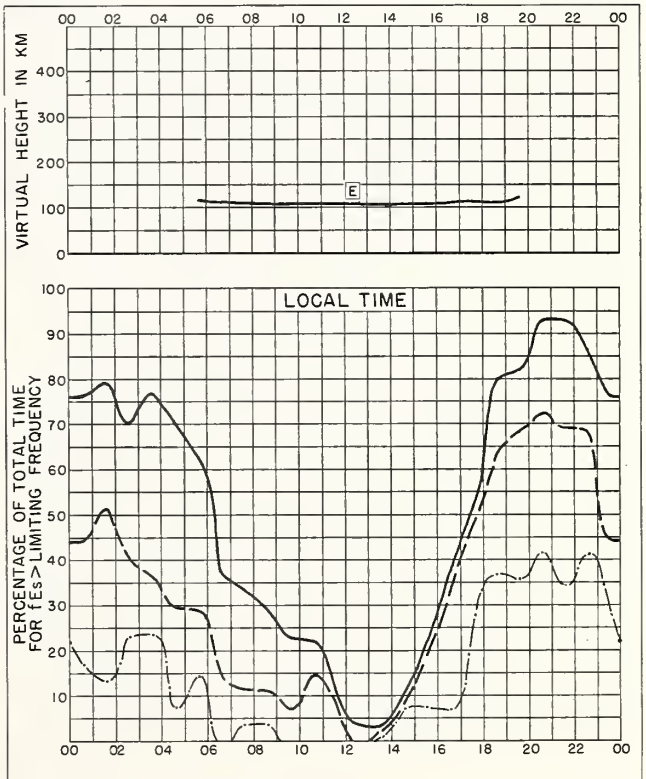


Fig. 36. BAKER LAKE, CANADA SEPTEMBER 1956

NBS 490

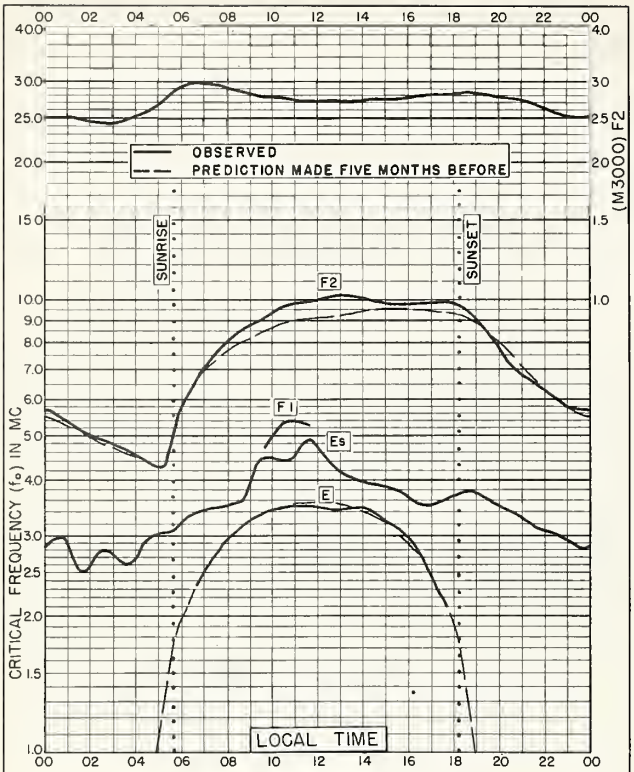


Fig. 37. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E SEPTEMBER 1956

NBS 503

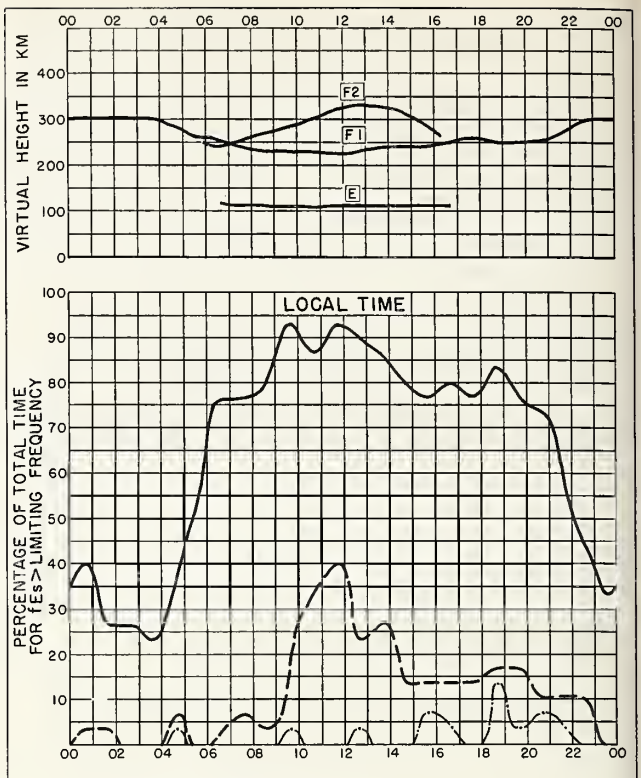


Fig. 38. LINDAU/HARZ, GERMANY SEPTEMBER 1956

NBS 490

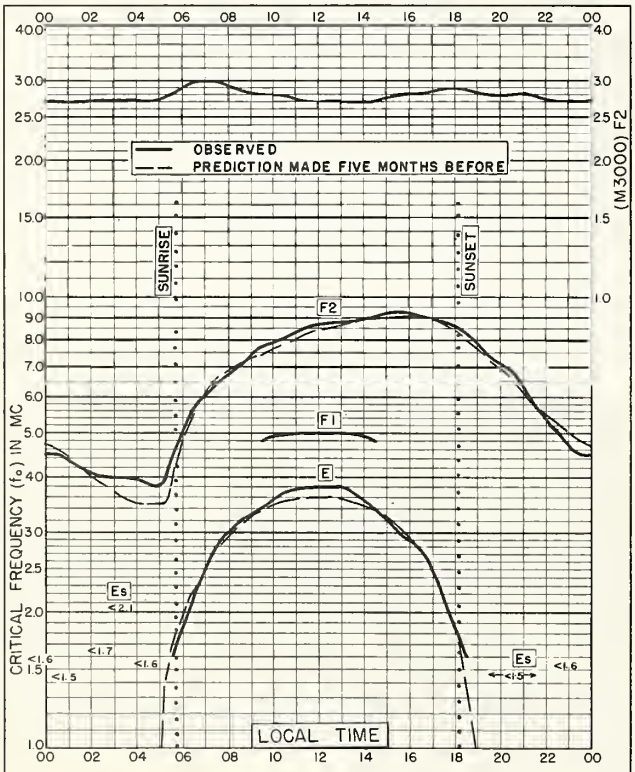


Fig. 39. WINNIPEG, CANADA
49.9°N, 97.4°W SEPTEMBER 1956

NBS 503

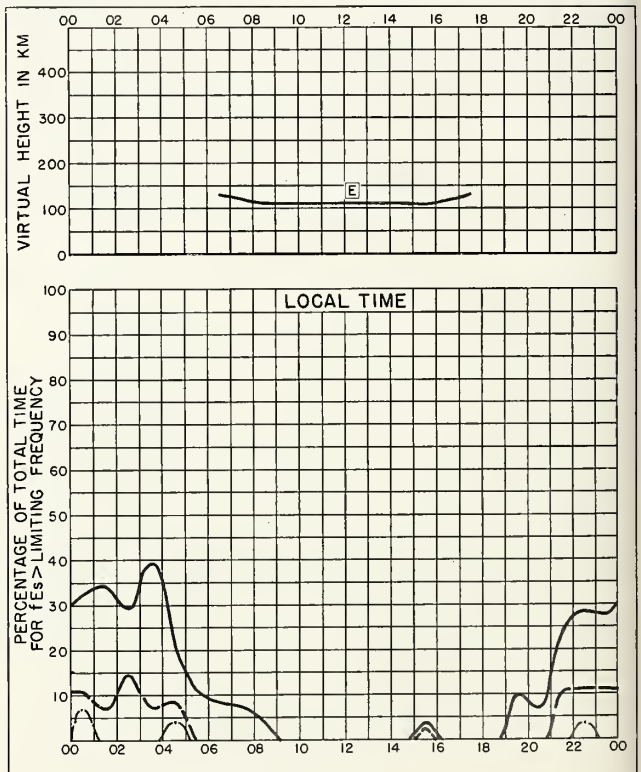


Fig. 40. WINNIPEG, CANADA SEPTEMBER 1956

NBS 490

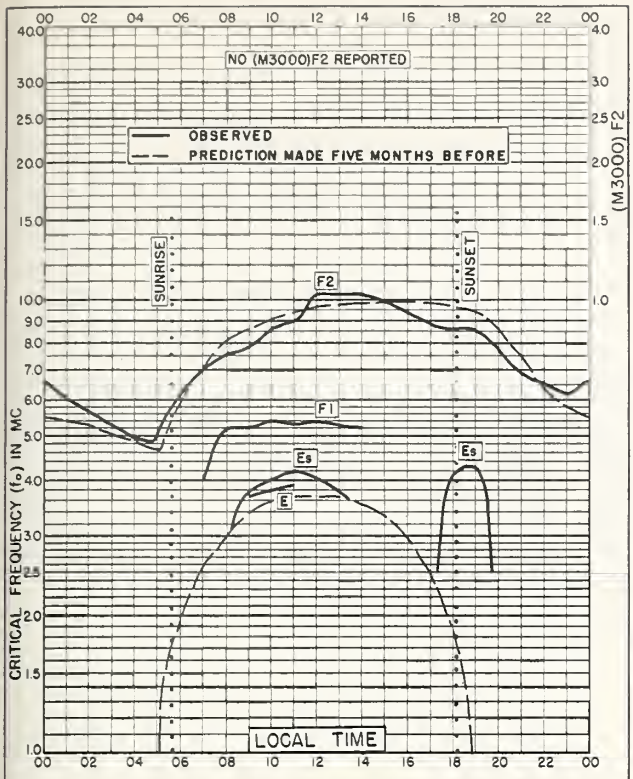


Fig. 41. GRAZ, AUSTRIA
47.1°N, 15.5°E SEPTEMBER 1956

NBS 503

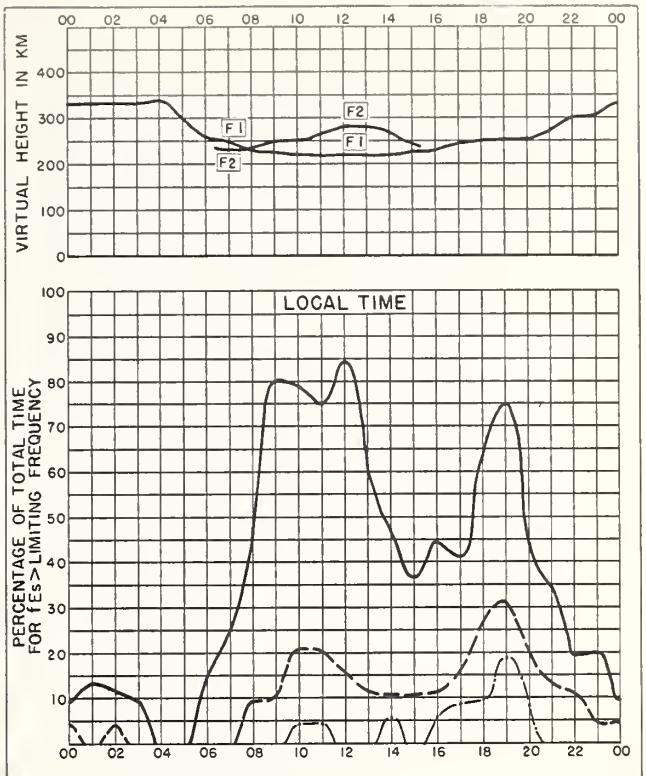


Fig. 42. GRAZ, AUSTRIA SEPTEMBER 1956

NBS 490

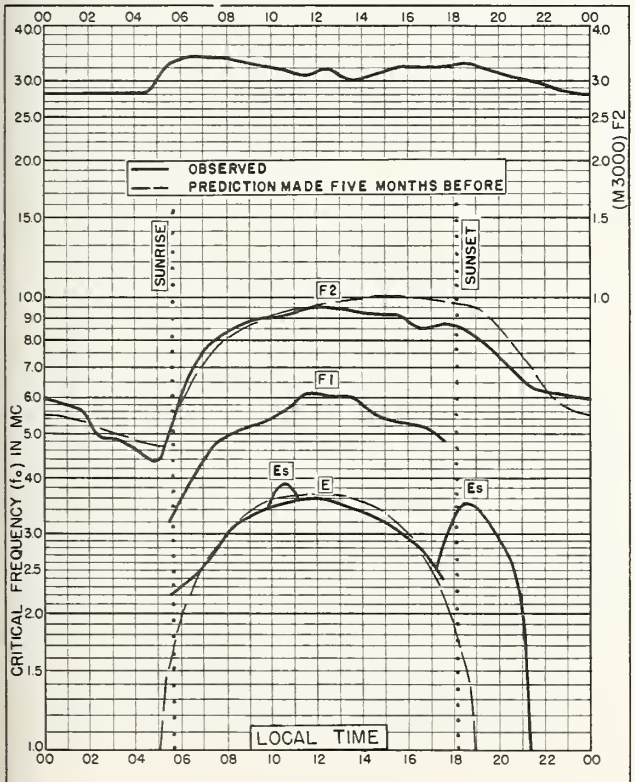


Fig. 43. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E SEPTEMBER 1956

NBS 503

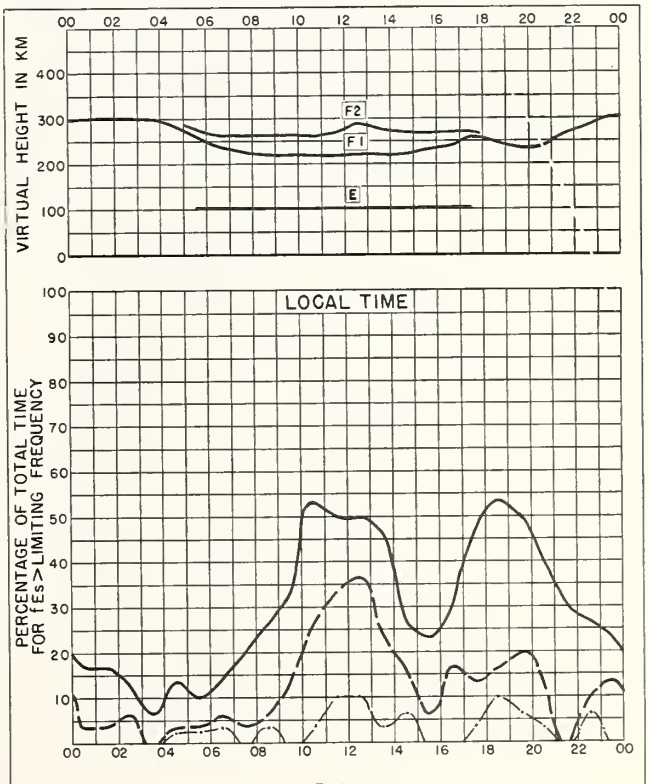


Fig. 44. SCHWARZENBURG, SWITZERLAND SEPTEMBER 1956

NBS 490

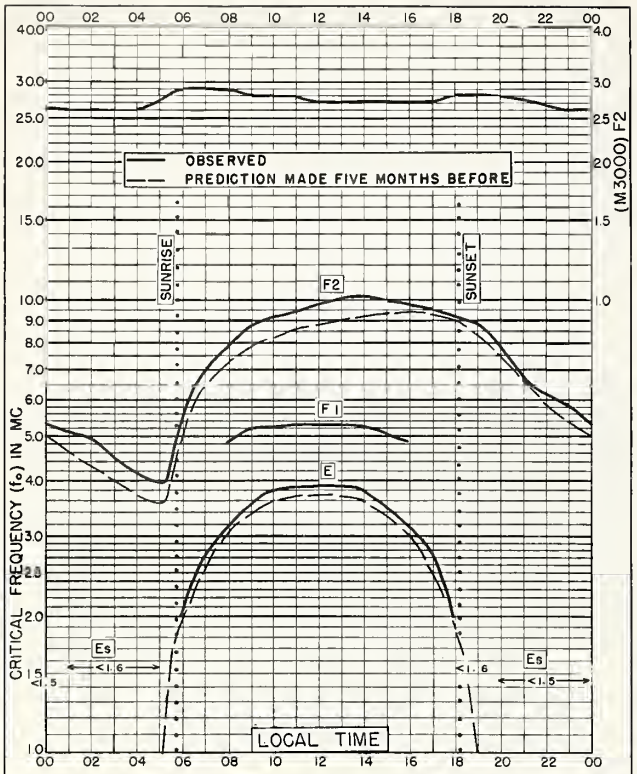


Fig. 45. OTTAWA, CANADA
45.4°N, 75.9°W SEPTEMBER 1956

NBS 503

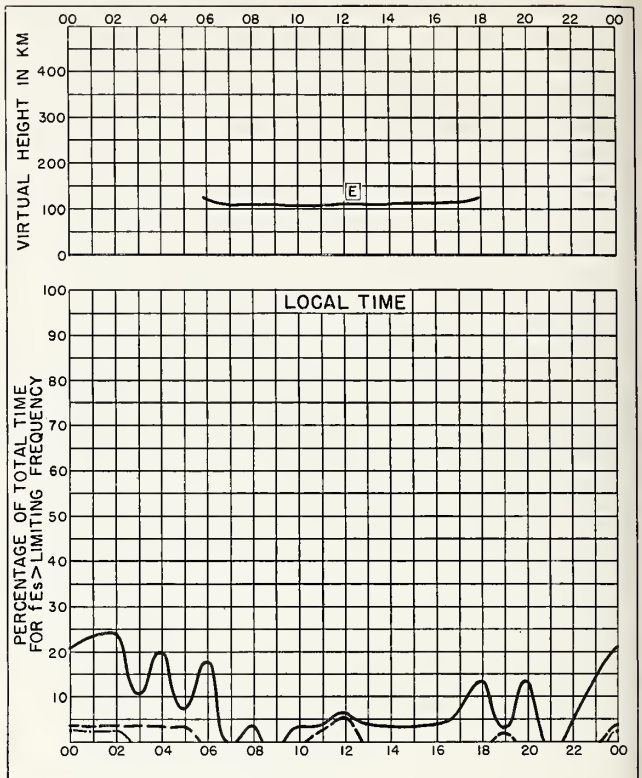


Fig. 46. OTTAWA, CANADA SEPTEMBER 1956

NBS 490

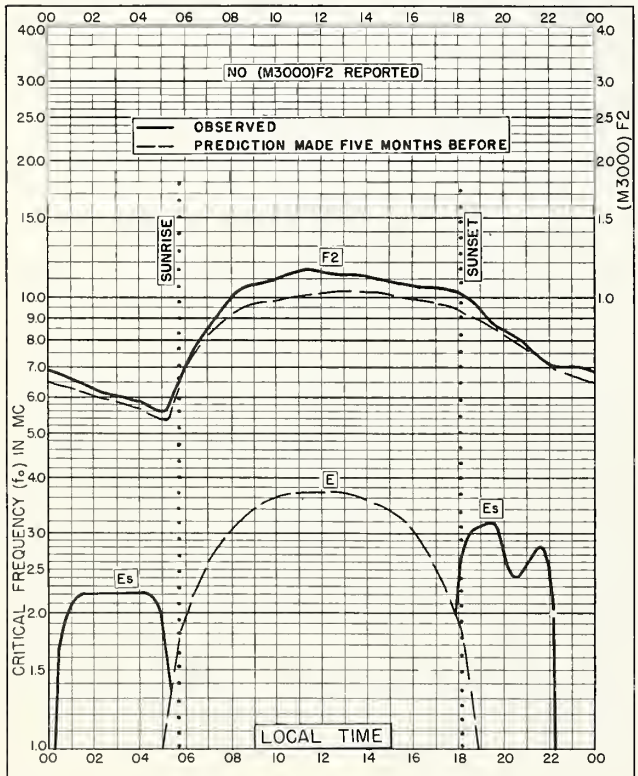


Fig. 47. WAKKANAI, JAPAN
45.4°N, 141.7°E SEPTEMBER 1956

NBS 503

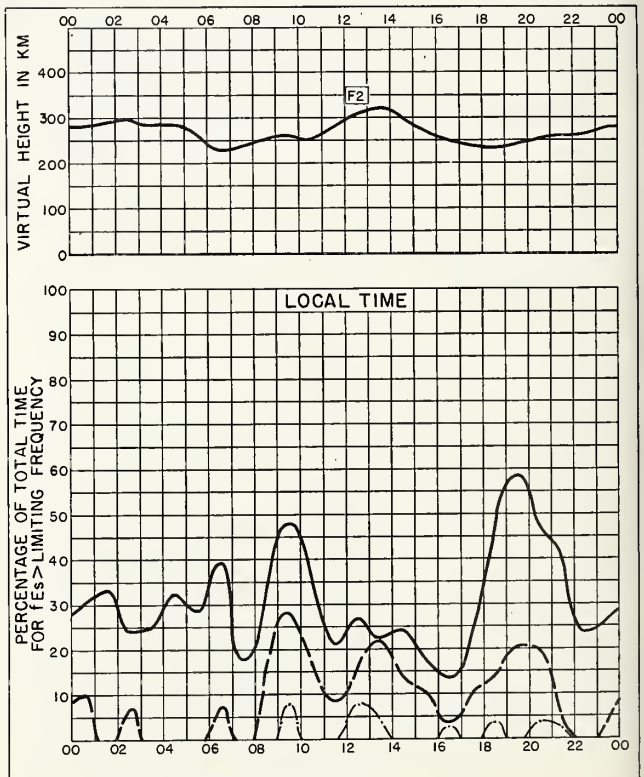


Fig. 48. WAKKANAI, JAPAN SEPTEMBER 1956

NBS 490

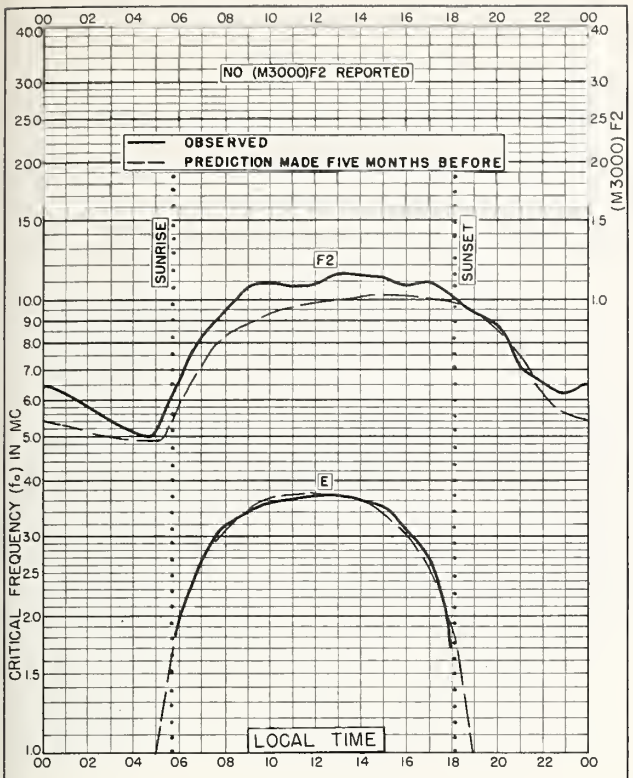


Fig. 49. MONTE CAPELLINO, ITALY
44.6°N, 9.0°E SEPTEMBER 1956

NBS 503

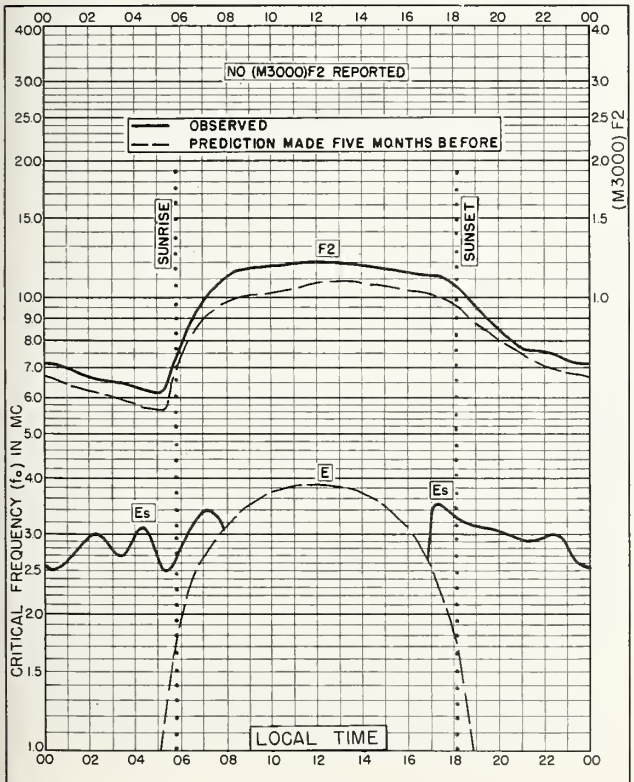


Fig. 50. AKITA, JAPAN
39.7°N, 140.1°E SEPTEMBER 1956

NBS 503

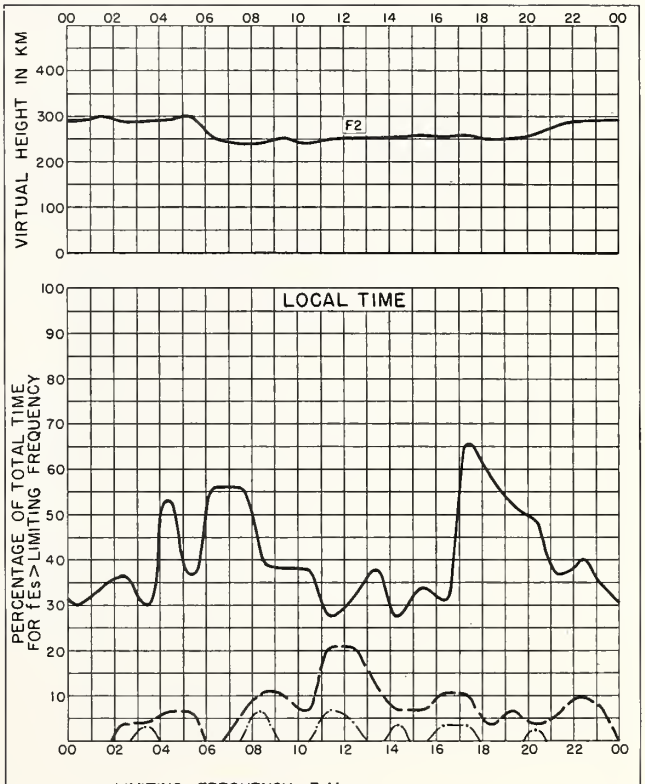


Fig. 51. AKITA, JAPAN SEPTEMBER 1956

NBS 490

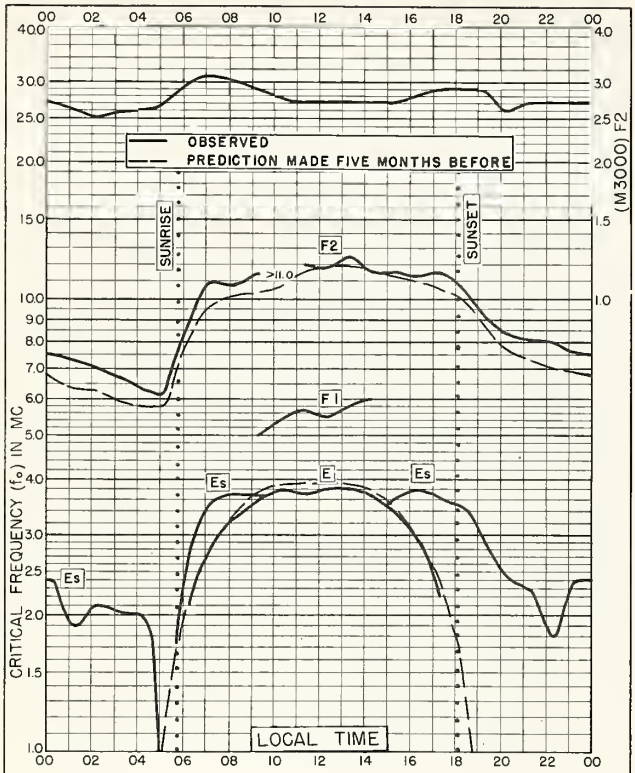


Fig. 52. TOKYO, JAPAN
35.7°N, 139.5°E SEPTEMBER 1956

NBS 503

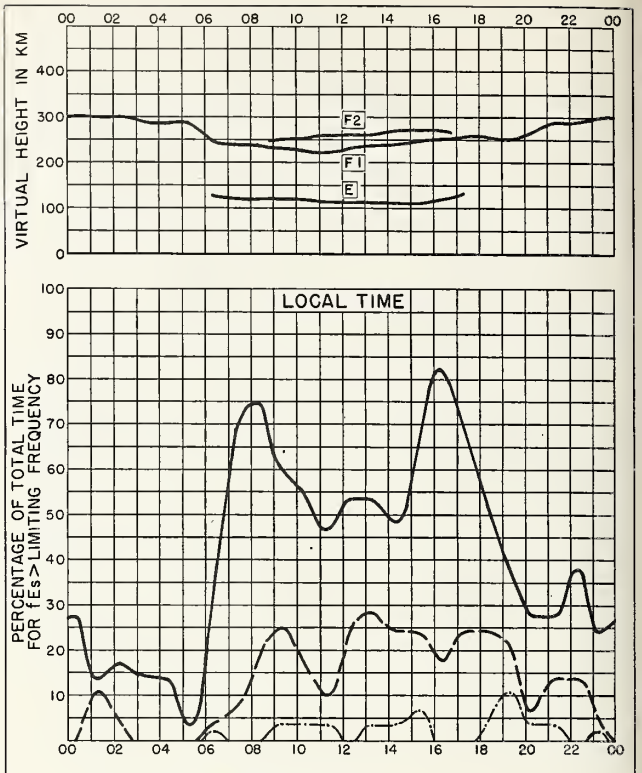


Fig. 53. TOKYO, JAPAN SEPTEMBER 1956

NBS 490

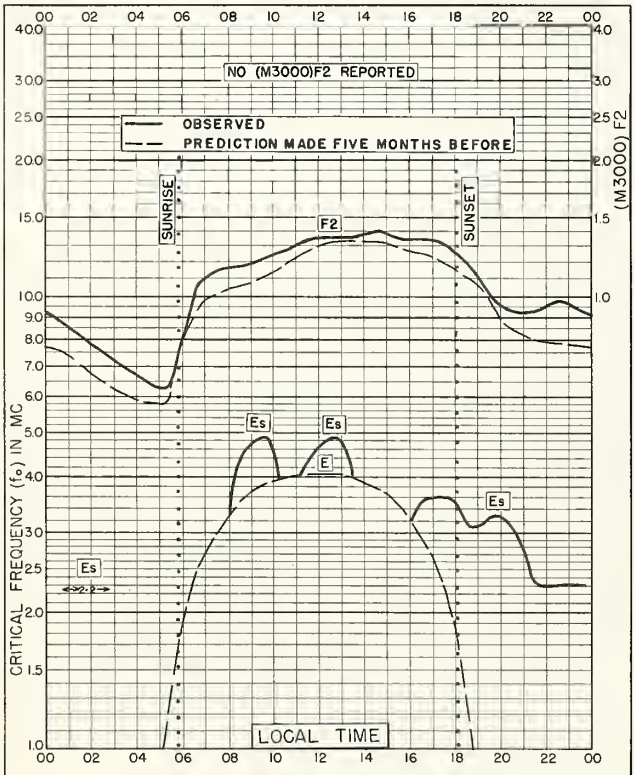


Fig. 54. YAMAGAWA, JAPAN
31.2°N, 130.6°E SEPTEMBER 1956

NBS 503

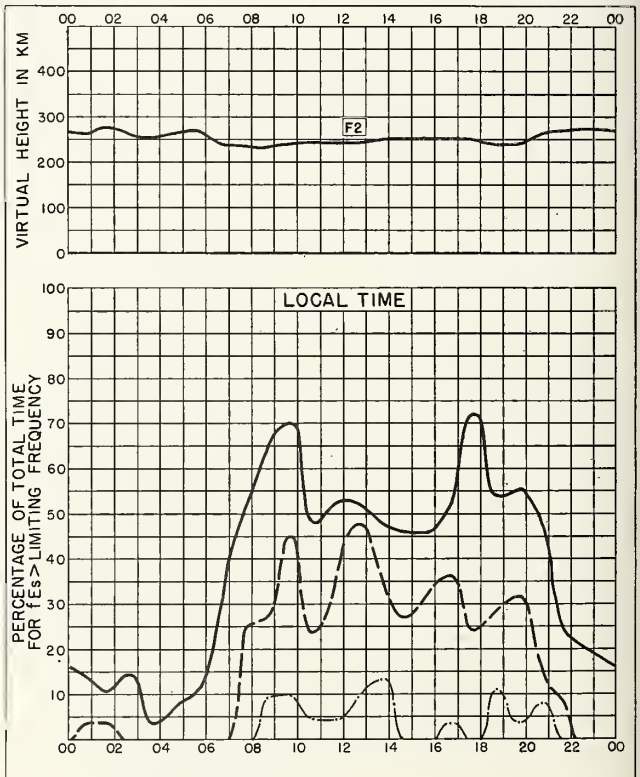


Fig. 55. YAMAGAWA, JAPAN SEPTEMBER 1956

NBS 490

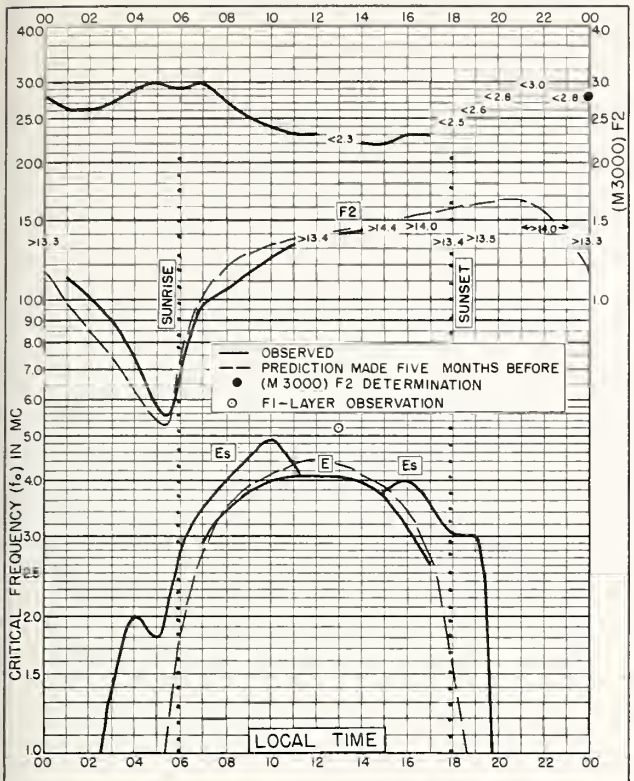


Fig. 56. LEOPOLDVILLE, BELGIAN CONGO
4.4°S, 15.2°E SEPTEMBER 1956

NBS 503

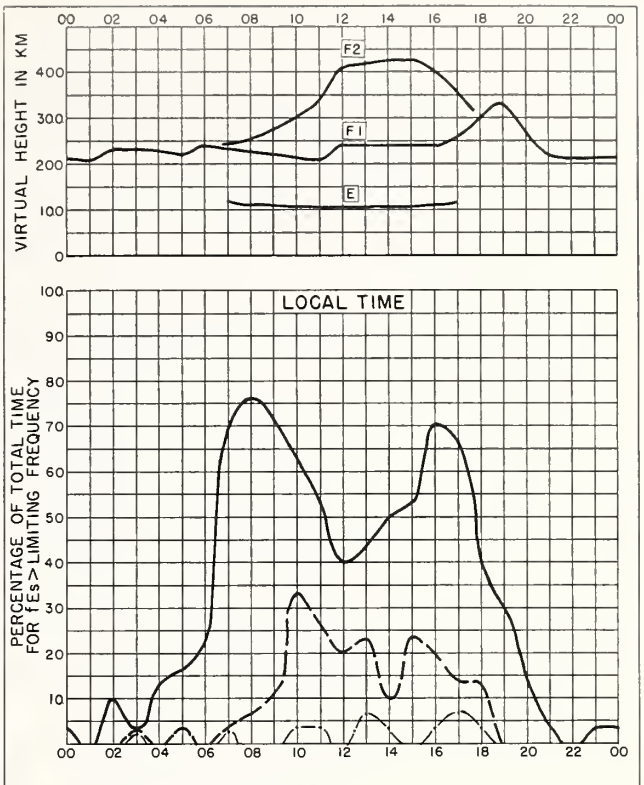


Fig. 57. LEOPOLDVILLE, BELGIAN CONGO SEPTEMBER 1956

NBS 490

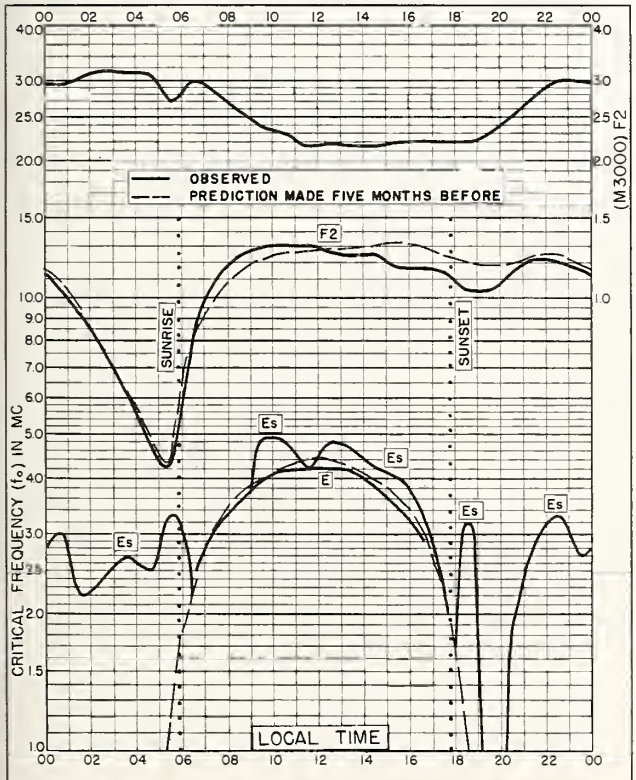


Fig. 58. TALARA, PERU
4.6°S, 81.3°W SEPTEMBER 1956

NBS 503

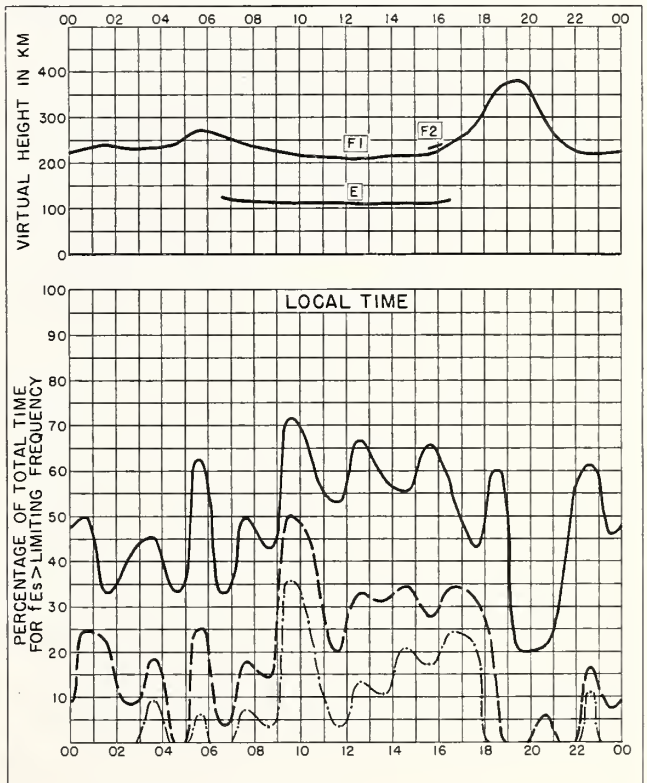


Fig. 59. TALARA, PERU SEPTEMBER 1956

NBS 490

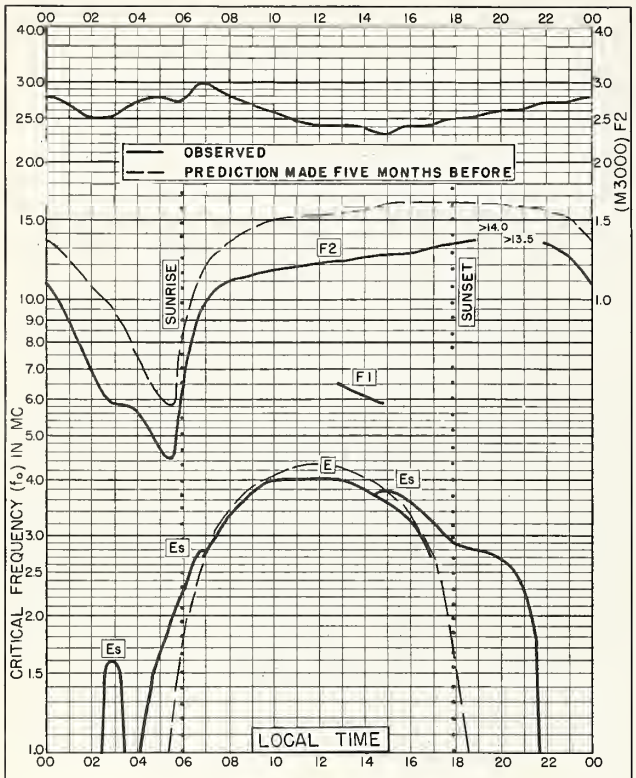


Fig. 60. ELISABETHVILLE, BELGIAN CONGO
11.6°S, 27.5°E SEPTEMBER 1956

NBS 503

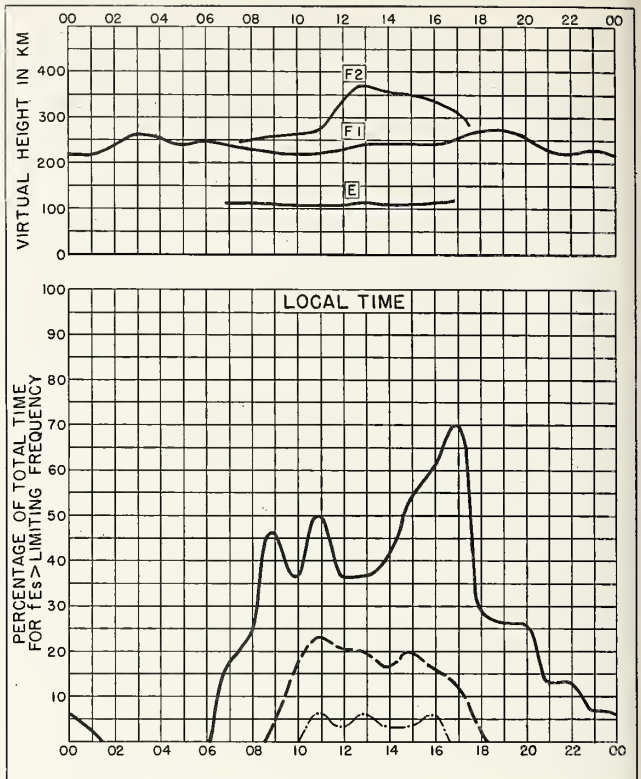


Fig. 61. ELISABETHVILLE, BELGIAN CONGO SEPTEMBER 1956

NBS 490

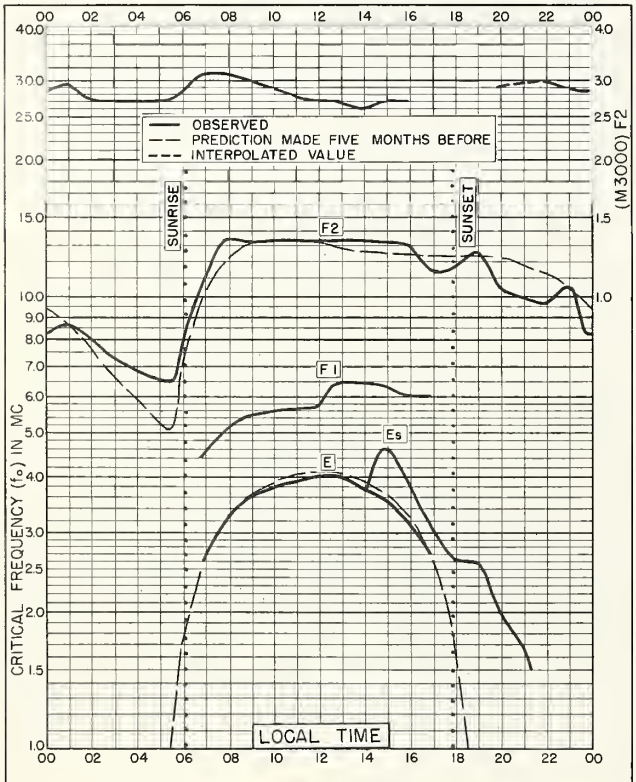


Fig. 62. RAROTONGA I.
21.3°S, 159.8°W SEPTEMBER 1956

NBS 503

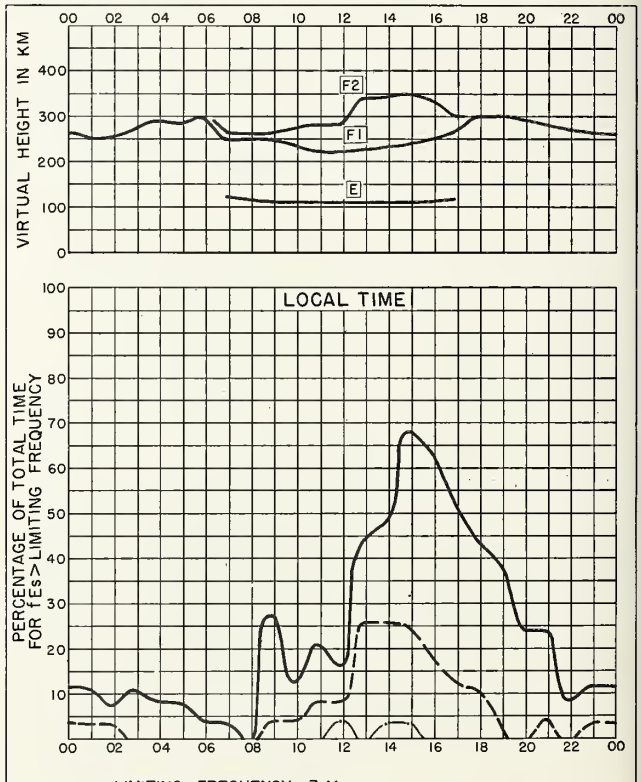


Fig. 63. RAROTONGA I. SEPTEMBER 1956

NBS 490

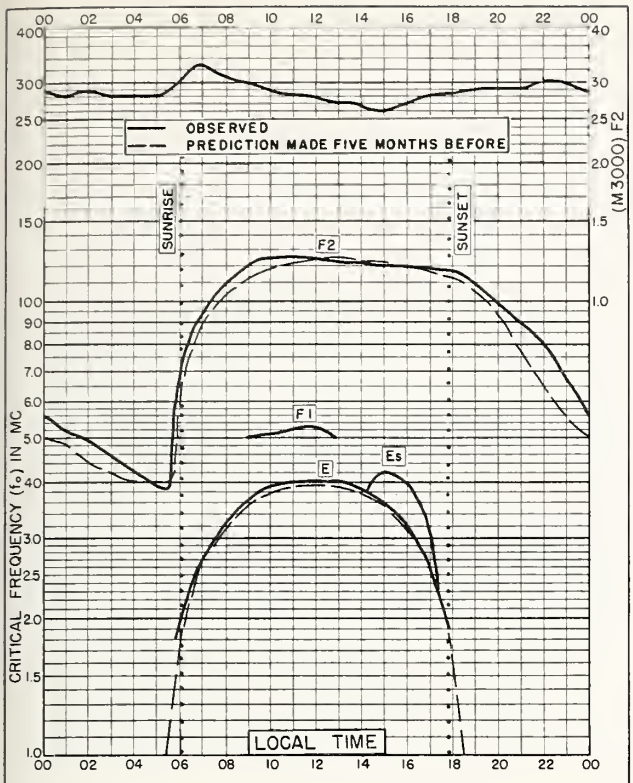
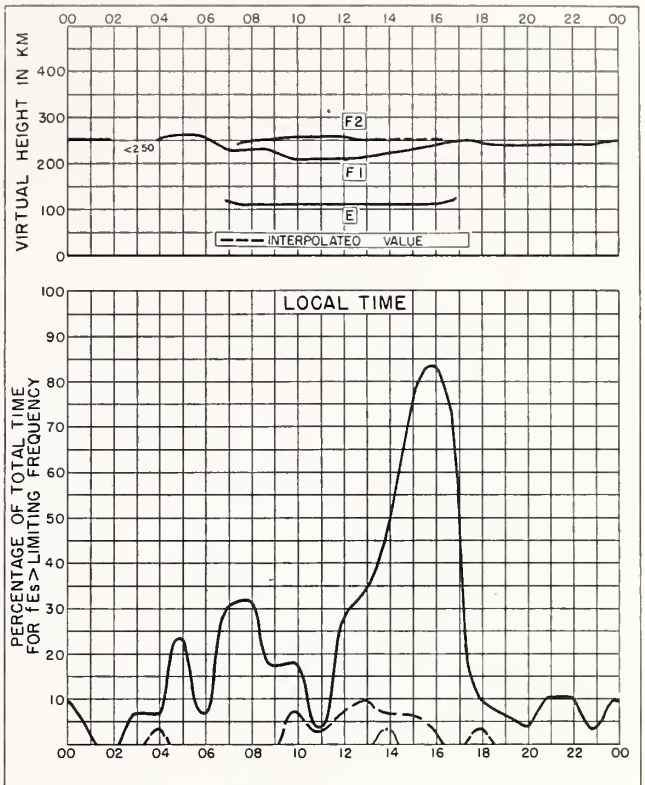


Fig. 64. JOHANNESBURG, UNION OF S. AFRICA
26.2°S, 28.1°E SEPTEMBER 1956

NBS 503



SEPTEMBER 1956

Fig. 65. JOHANNESBURG, UNION OF S. AFRICA

NBS 490

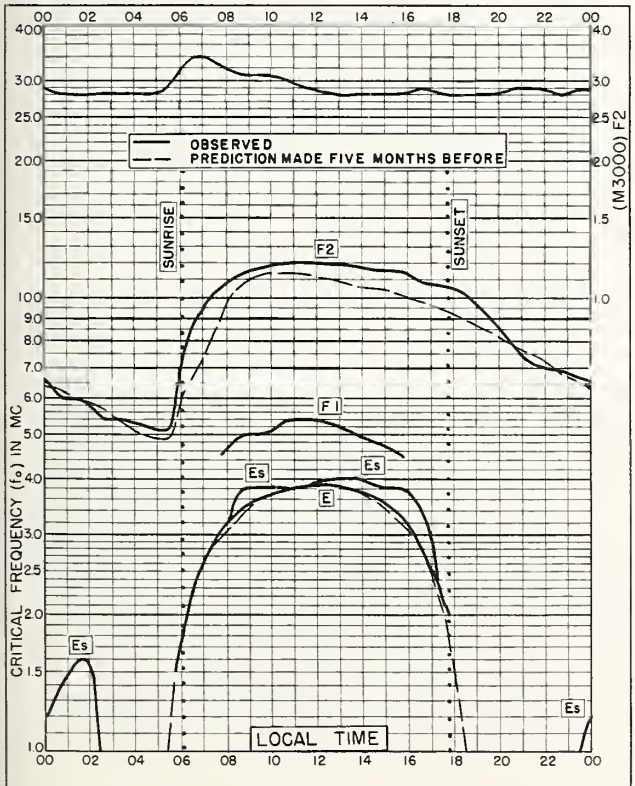
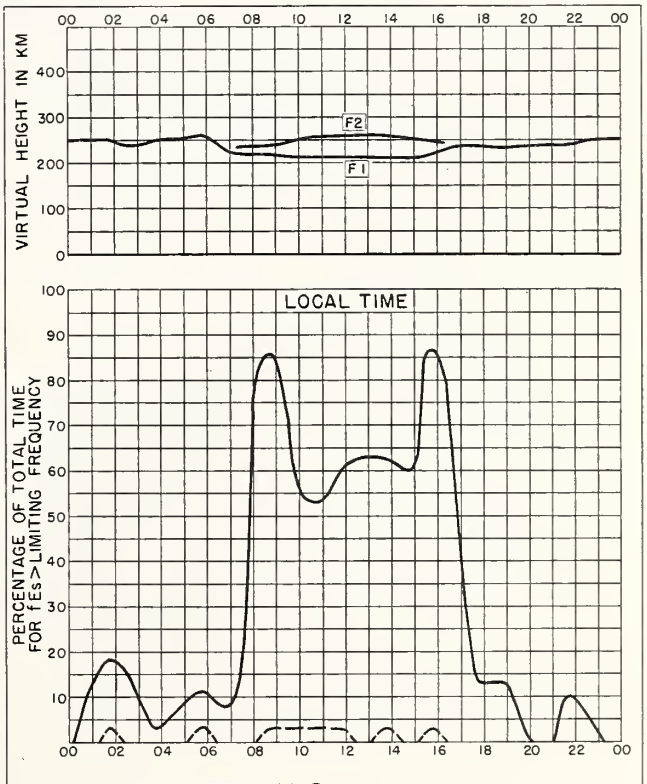


Fig. 66. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E SEPTEMBER 1956

NBS 503



SEPTEMBER 1956

Fig. 67. WATHEROO, W. AUSTRALIA

NBS 490

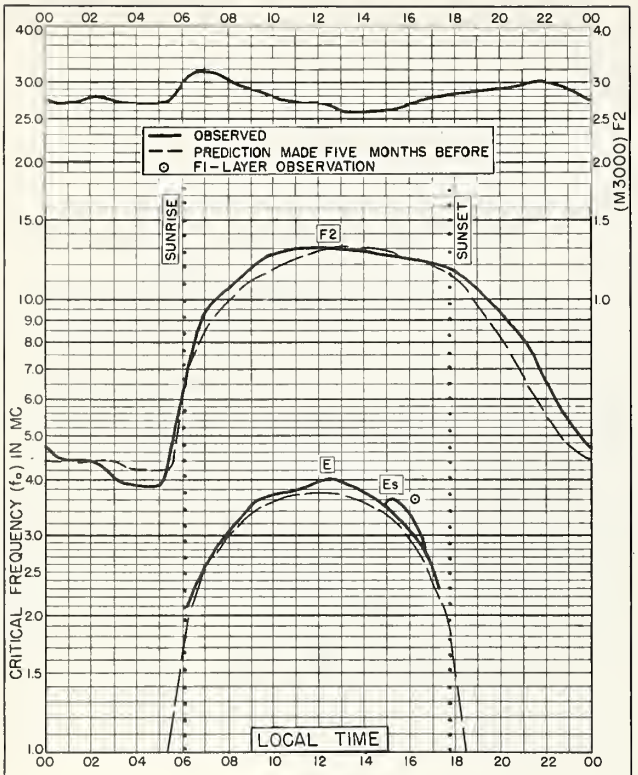


Fig. 68. CAPETOWN, UNION OF S. AFRICA
34.2°S, 18.3°E SEPTEMBER 1956

NBS 503

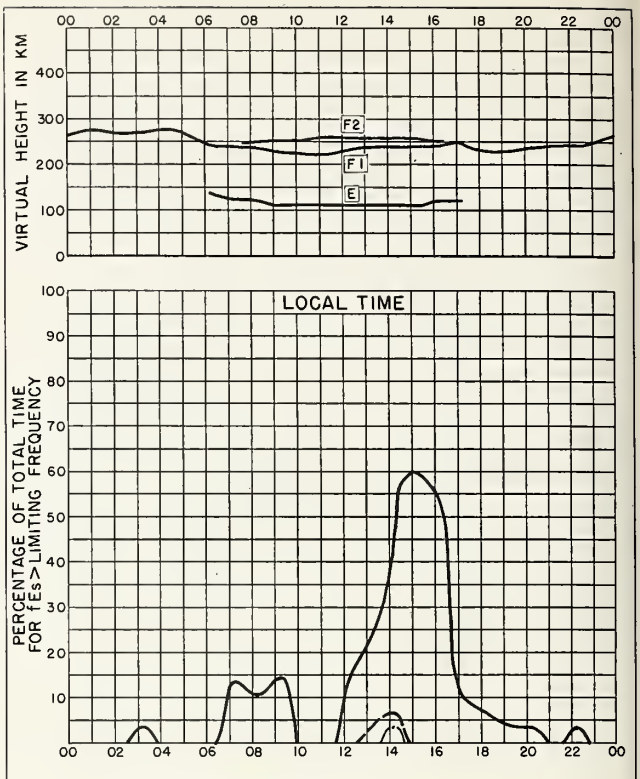


Fig. 69. CAPETOWN, UNION OF S. AFRICA

NBS 490

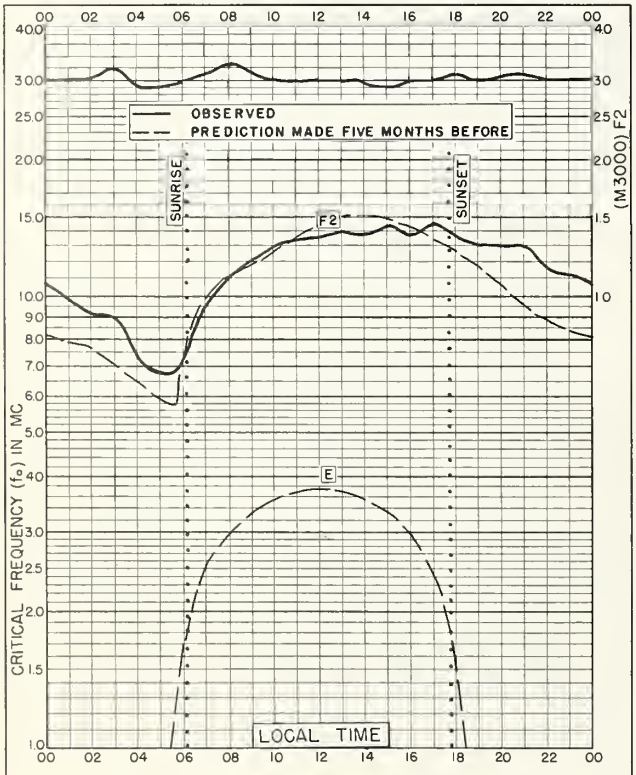


Fig. 70. BUENOS AIRES, ARGENTINA
34.5°S, 58.5°W SEPTEMBER 1956

NBS 503

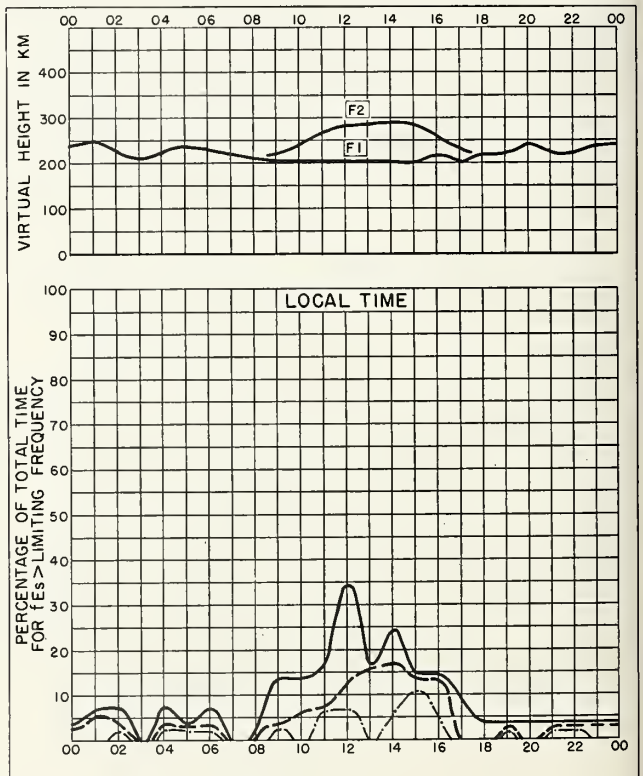


Fig. 71. BUENOS AIRES, ARGENTINA

NBS 490

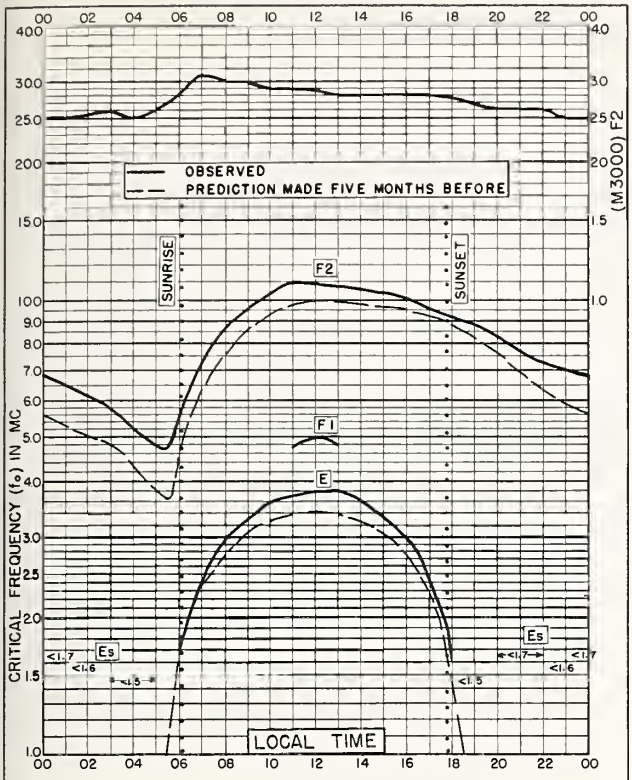


Fig. 72. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E SEPTEMBER 1956

NBS 503

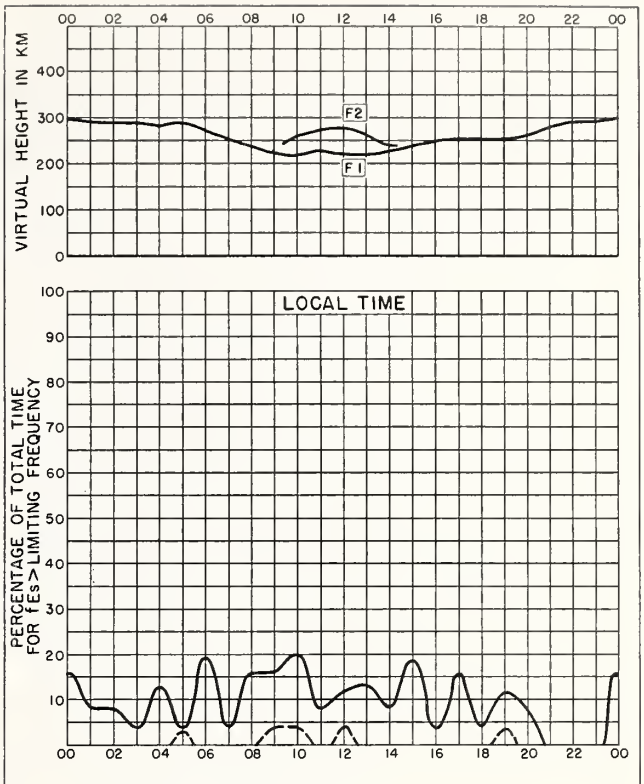


Fig. 73. CHRISTCHURCH, NEW ZEALAND SEPTEMBER 1956

NBS 490

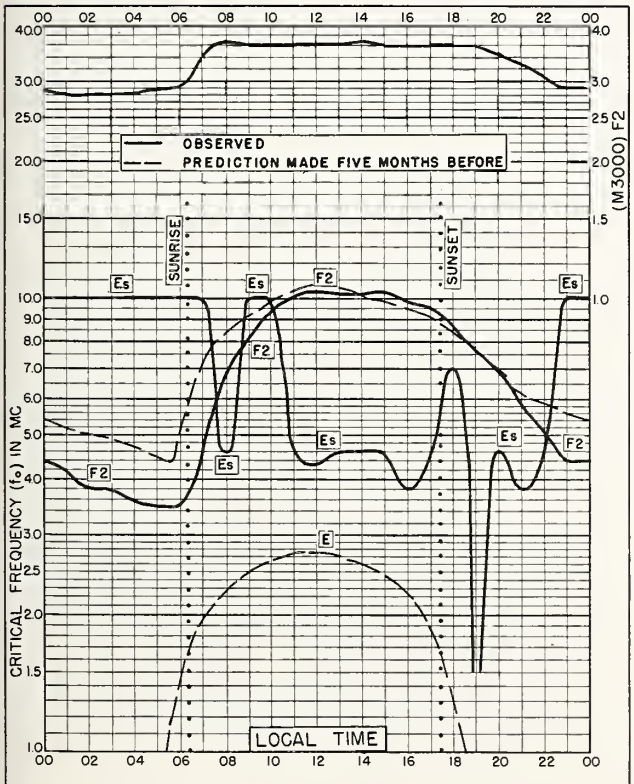


Fig. 74. DECEPCION I.
63.0°S, 60.7°W SEPTEMBER 1956

NBS 503

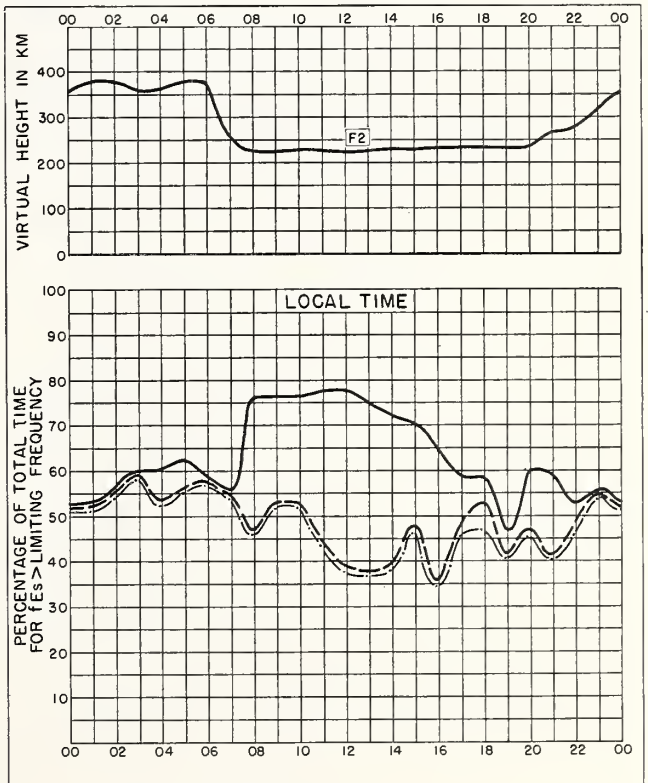


Fig. 75. DECEPCION I. SEPTEMBER 1956

NBS 490

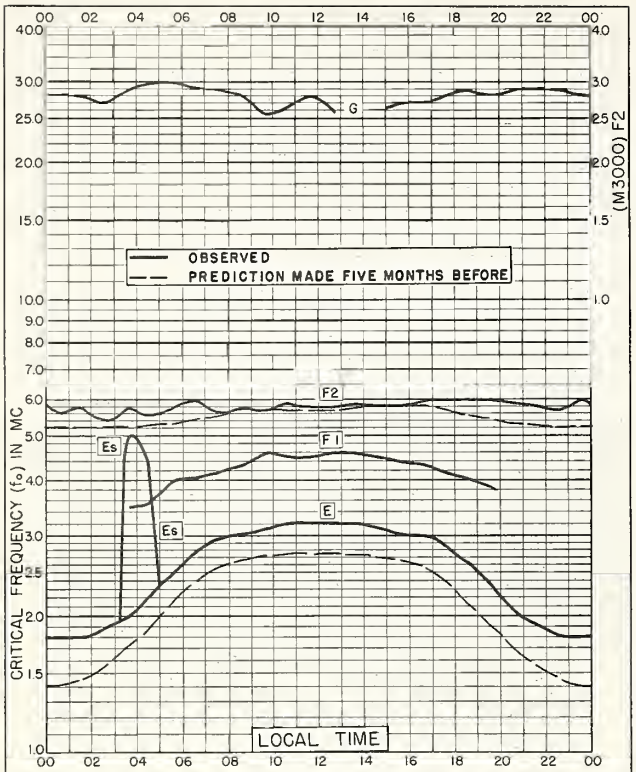


Fig. 76. RESOLUTE BAY, CANADA
74.7°N, 94.9°W AUGUST 1956

NBS 503

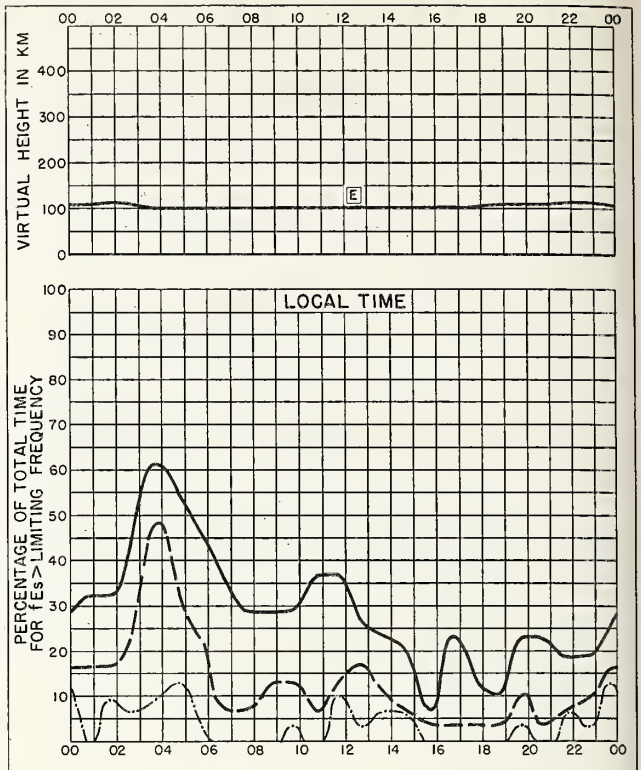


Fig. 77. RESOLUTE BAY, CANADA AUGUST 1956

NBS 490

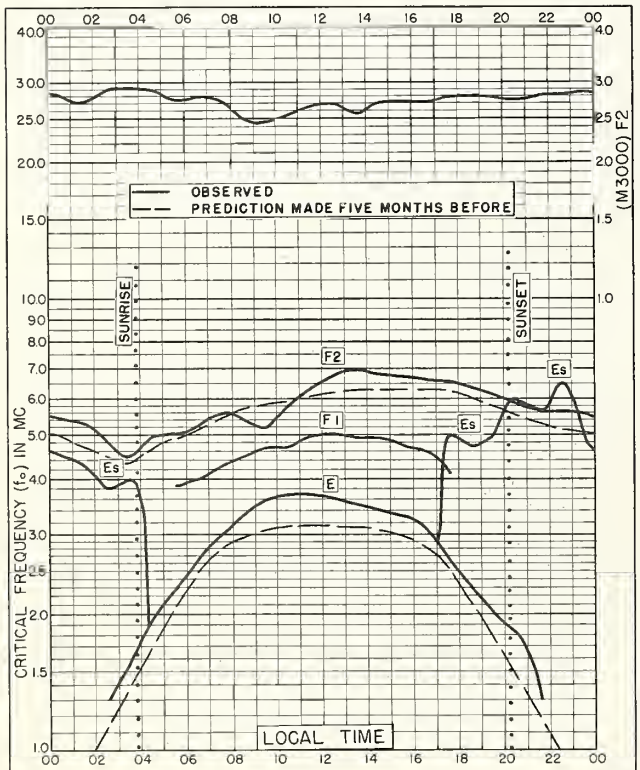


Fig. 78. BAKER LAKE, CANADA
64.3°N, 96.0°W AUGUST 1956

NBS 503

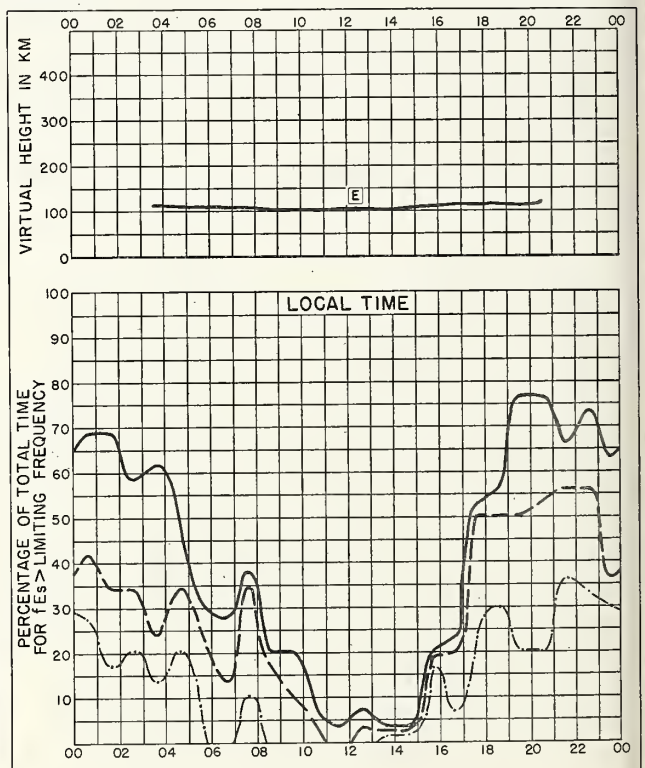


Fig. 79. BAKER LAKE, CANADA AUGUST 1956

NBS 490

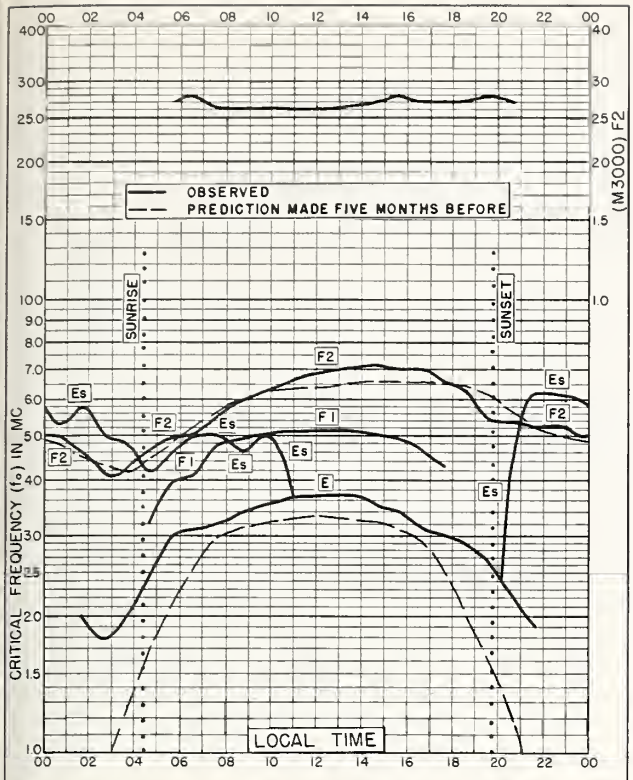


Fig. 80. CHURCHILL, CANADA
58.8°N, 94.2°W AUGUST 1956

NBS 503

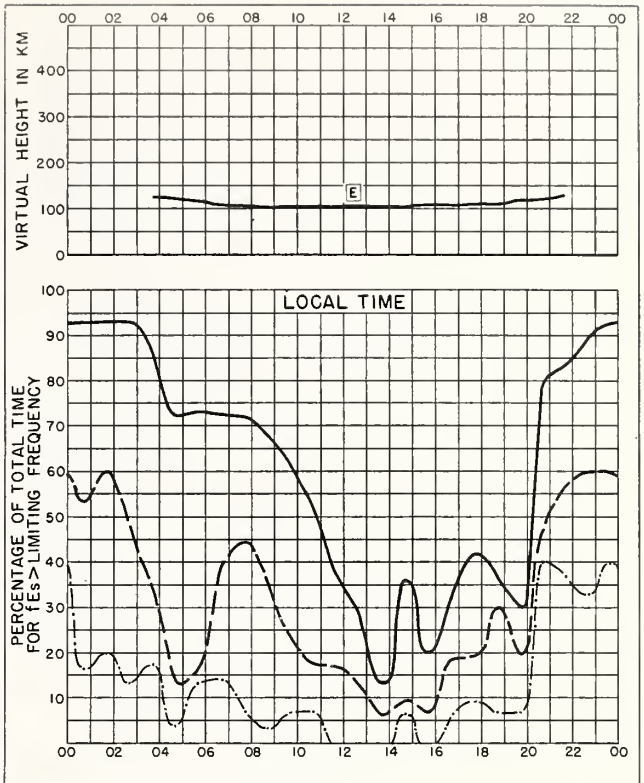


Fig. 81. CHURCHILL, CANADA AUGUST 1956

NBS 490

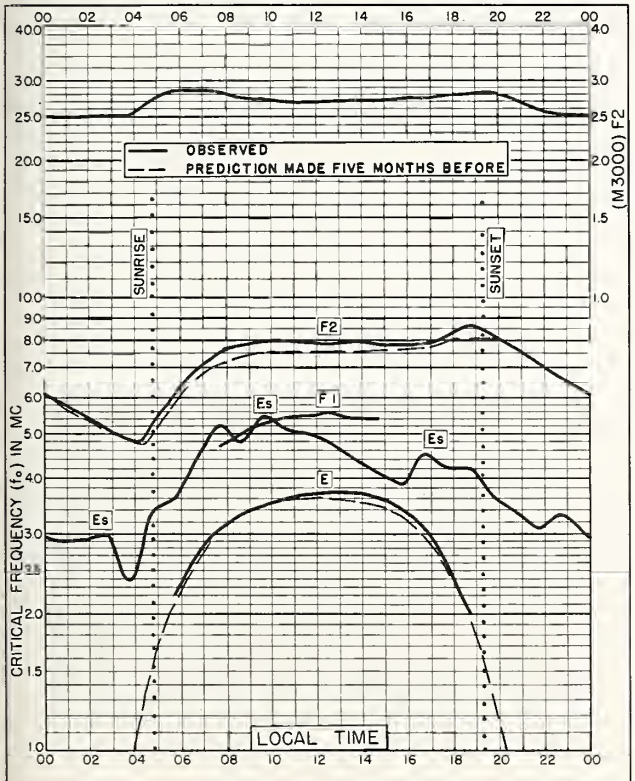


Fig. 82. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E AUGUST 1956

NBS 503

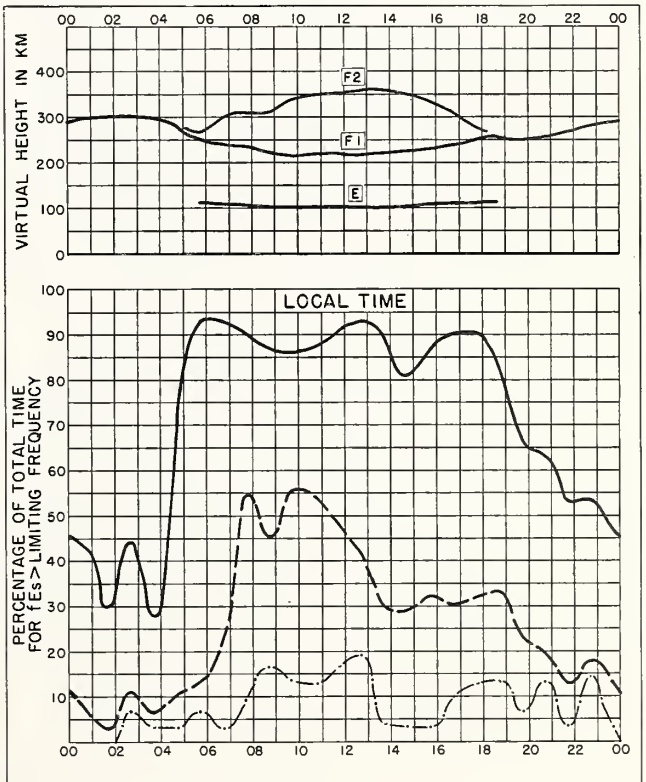


Fig. 83. LINDAU/HARZ, GERMANY AUGUST 1956

NBS 490

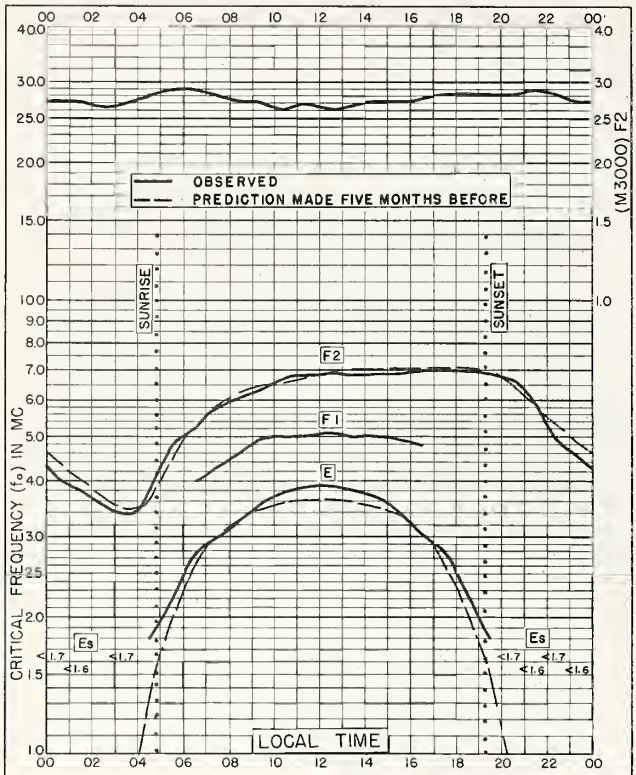


Fig. 84. WINNIPEG, CANADA
49.9°N, 97.4°W AUGUST 1956

NBS 503

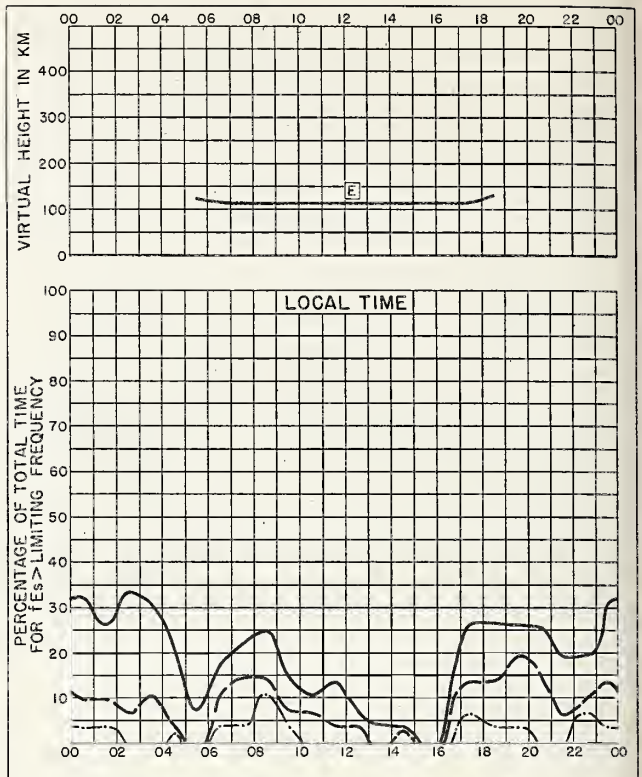


Fig. 85. WINNIPEG, CANADA AUGUST 1956

NBS 490

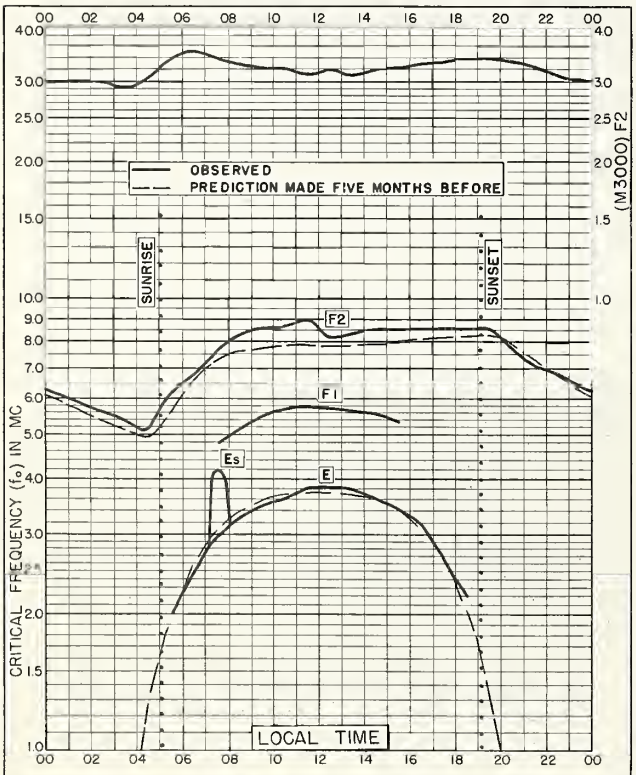


Fig. 86. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E AUGUST 1956

NBS 503

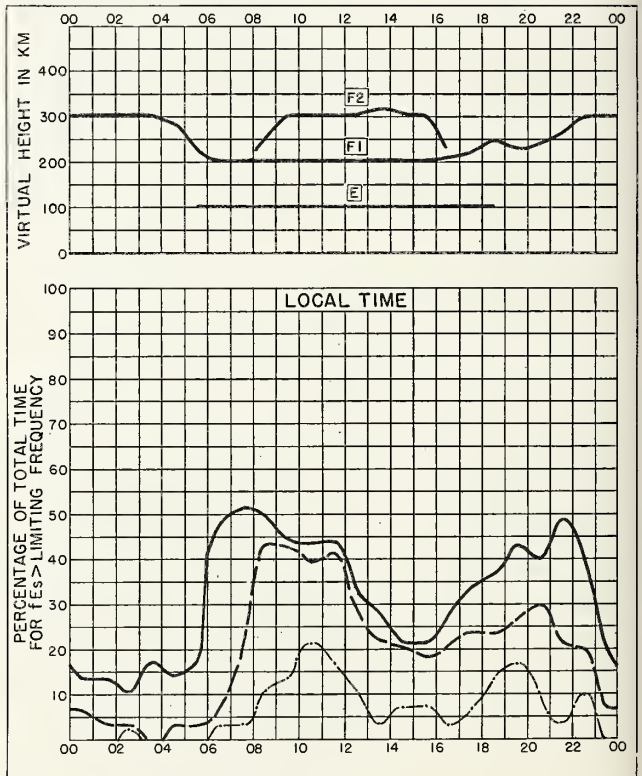


Fig. 87. SCHWARZENBURG, SWITZERLAND AUGUST 1956

NBS 490

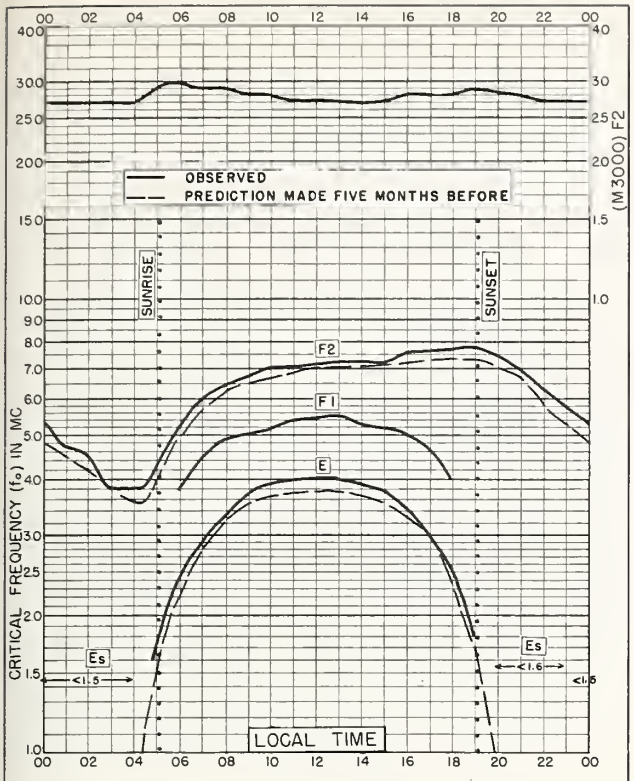


Fig. 88. OTTAWA, CANADA
45.4°N, 75.9°W AUGUST 1956

NBS 503

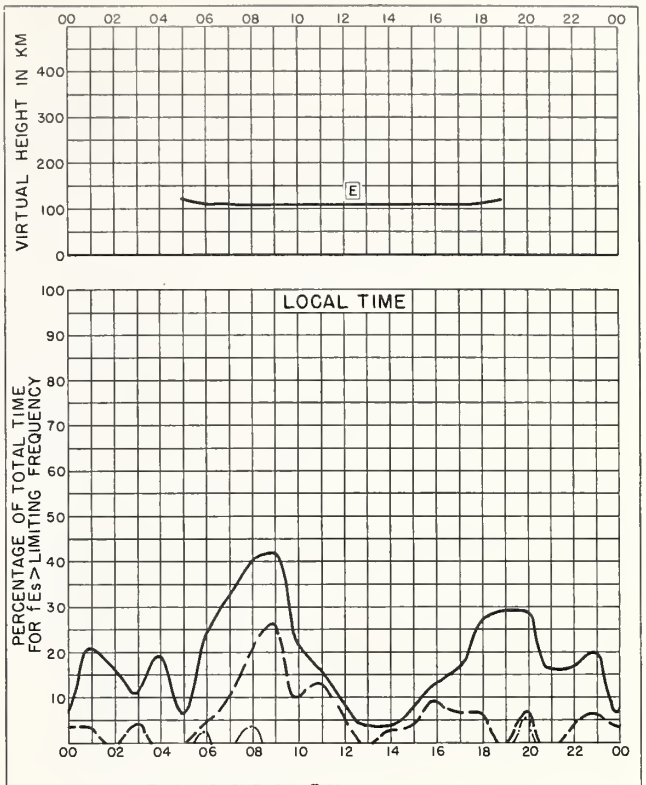


Fig. 89. OTTAWA, CANADA AUGUST 1956

NBS 490

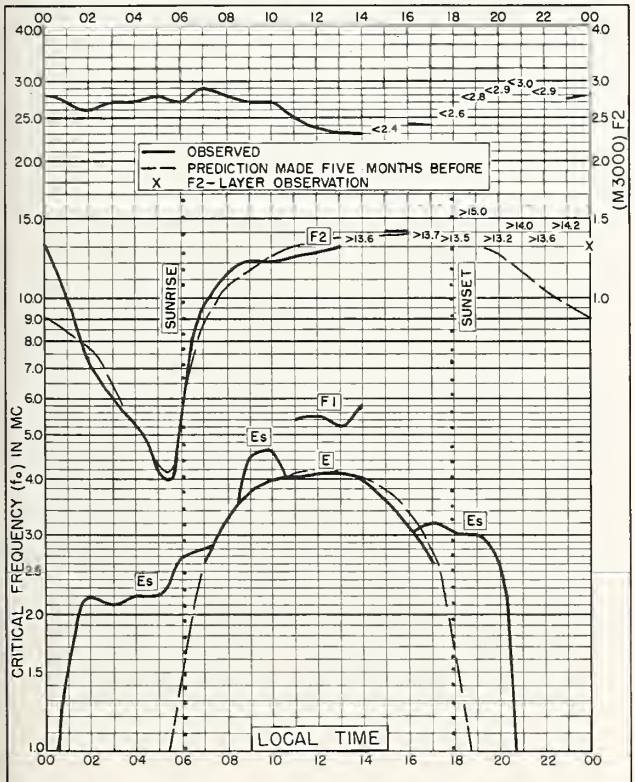


Fig. 90. LEOPOLDVILLE, BELGIAN CONGO
4.4°S, 15.2°E AUGUST 1956

NBS 503

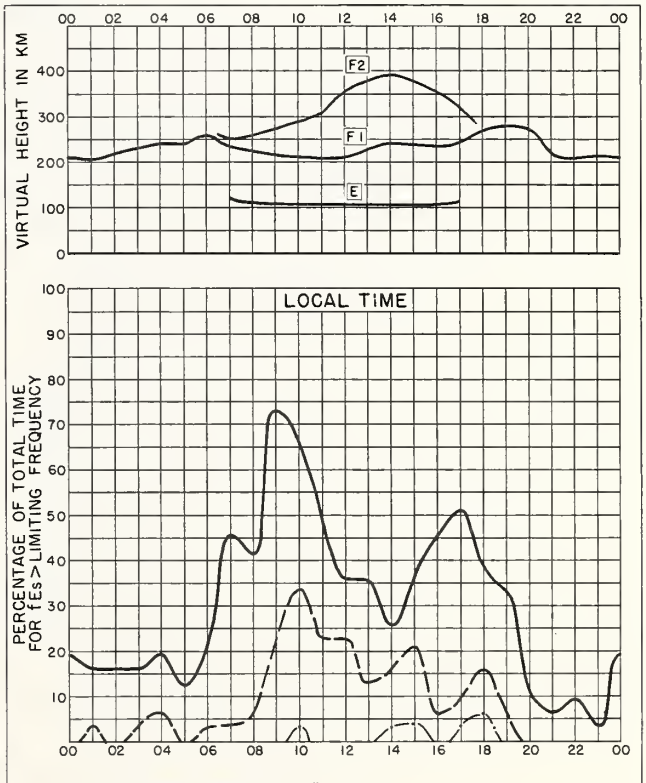


Fig. 91. LEOPOLDVILLE, BELGIAN CONGO AUGUST 1956

NBS 490

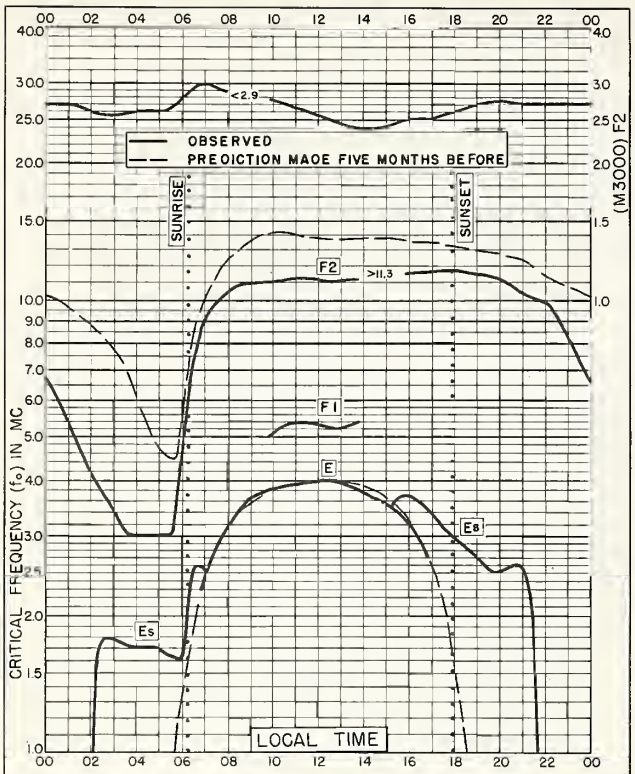


Fig. 92. ELISABETHVILLE, BELGIAN CONGO
11.6°S, 27.5°E AUGUST 1956

NBS 503

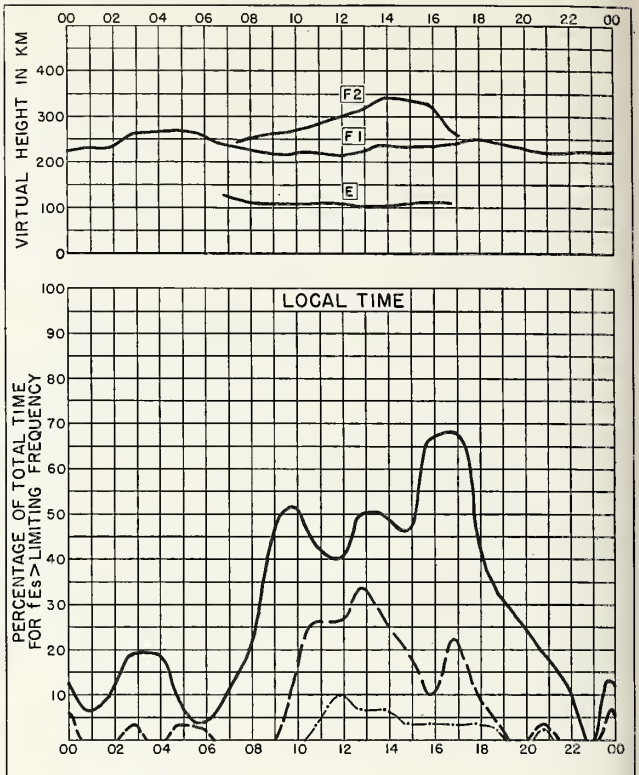


Fig. 93. ELISABETHVILLE, BELGIAN CONGO AUGUST 1956

NBS 490

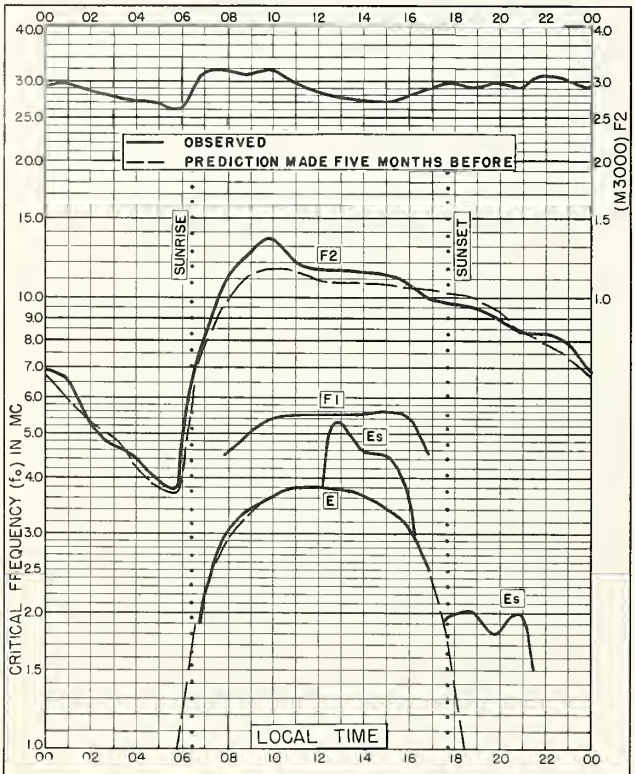


Fig. 94. RAROTONGA I.
21.3°S, 159.8° W AUGUST 1956

NBS 503

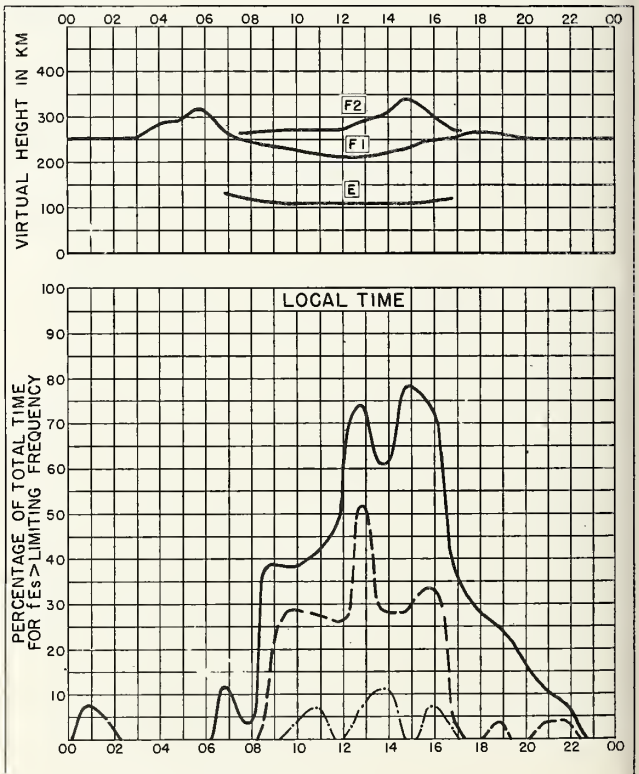


Fig. 95. RAROTONGA I. AUGUST 1956

NBS 490

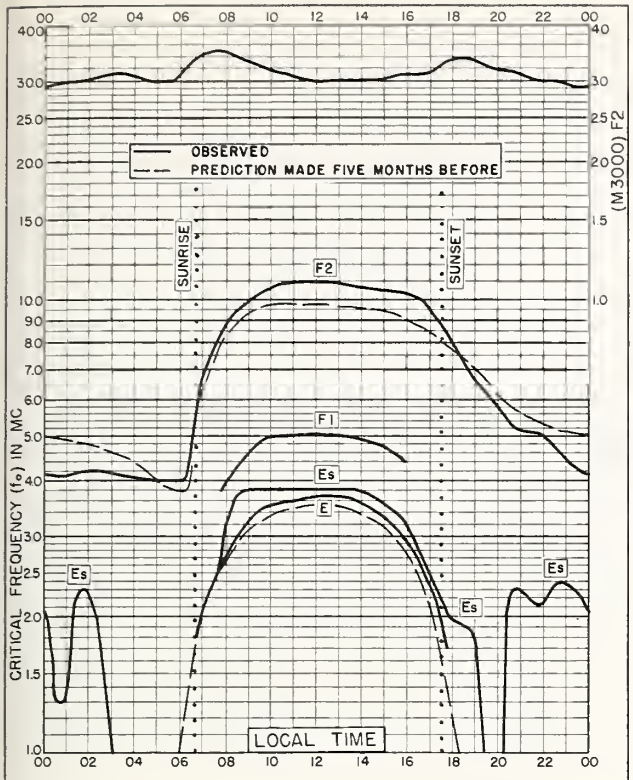


Fig. 96. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E AUGUST 1956

NBS 503

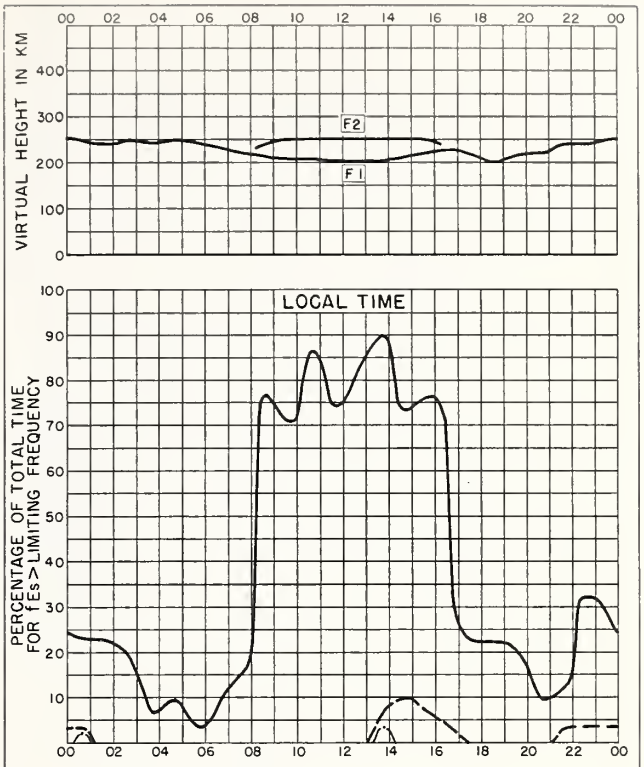


Fig. 97. WATHEROO, W. AUSTRALIA AUGUST 1956

NBS 490

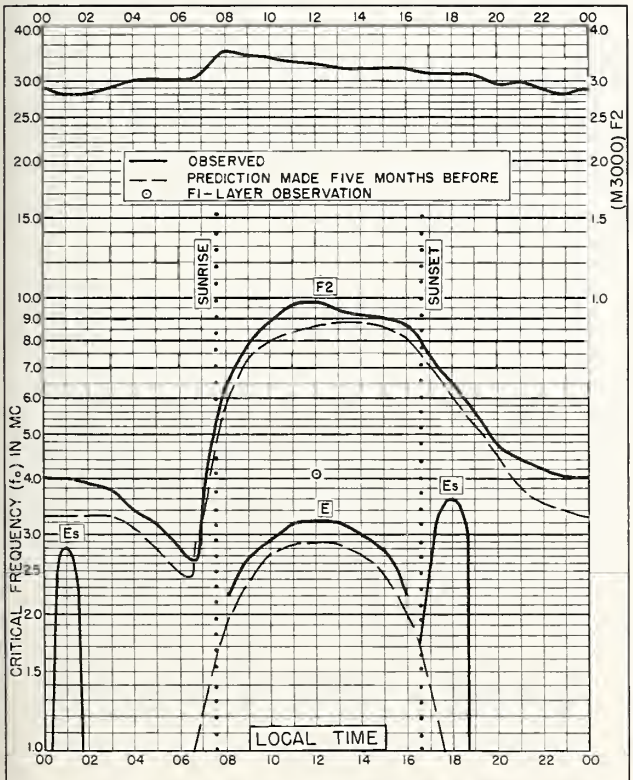


Fig. 98. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E JULY 1956

NBS 503

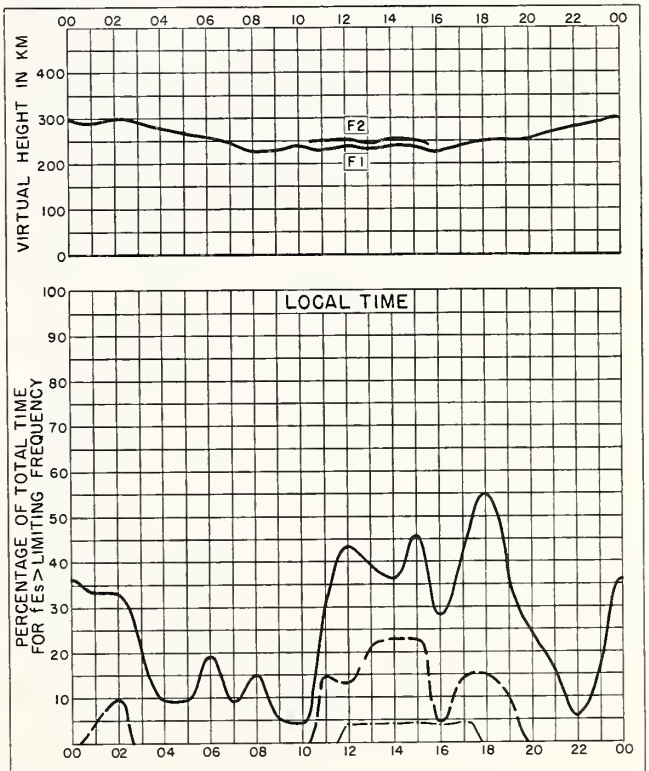


Fig. 99. CHRISTCHURCH, NEW ZEALAND JULY 1956

NBS 490

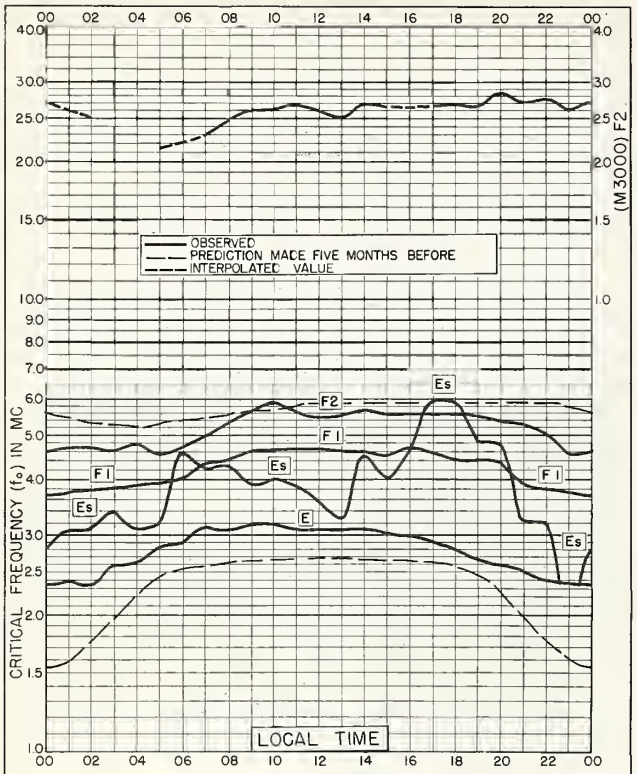


Fig. 100. SVALBARD, NORWAY
78.2°N, 15.5°E JUNE 1956

NBS 503

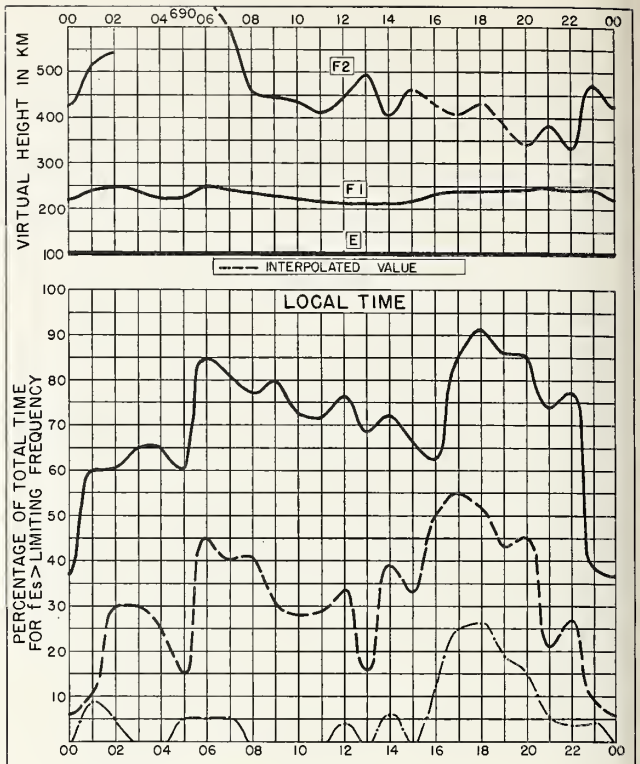


Fig. 101. SVALBARD, NORWAY JUNE 1956

NBS 490

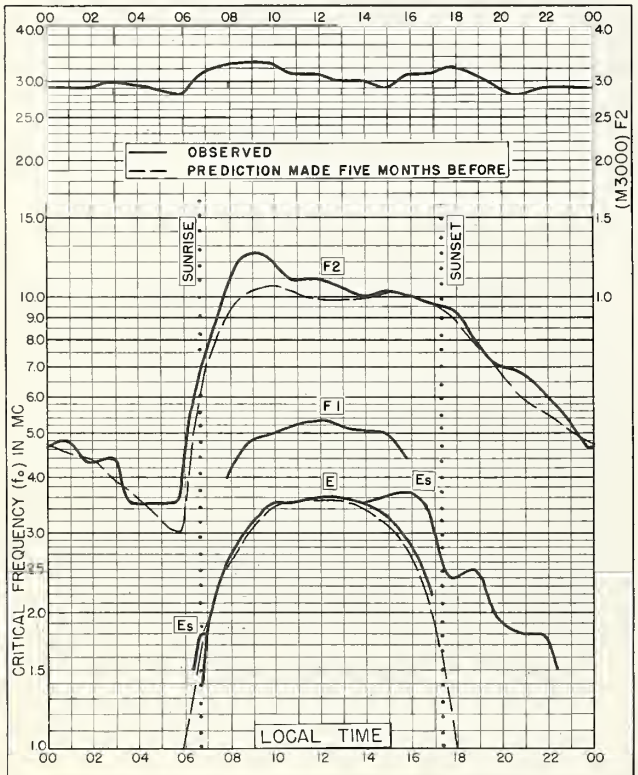


Fig. 102. RAROTONGA I.
21.3°S, 159.8°W JUNE 1956

NBS 503

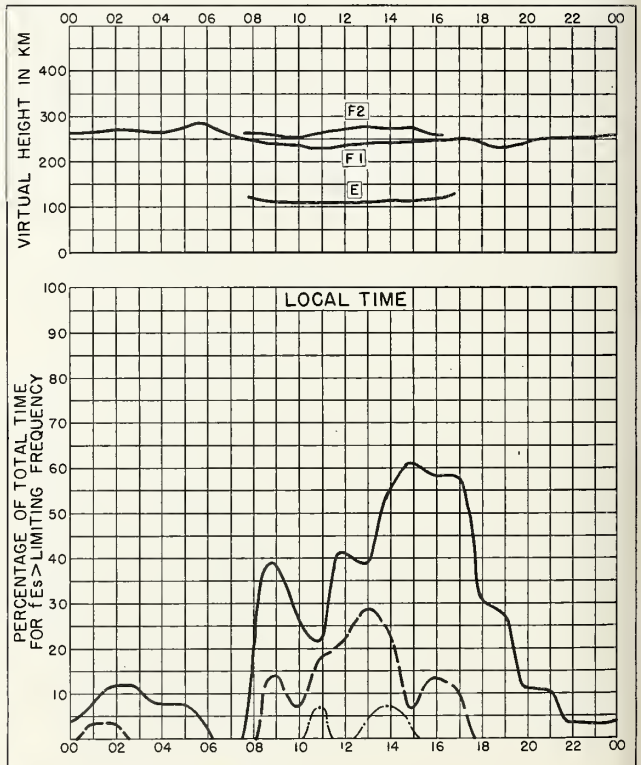


Fig. 103. RAROTONGA I. JUNE 1956

NBS 490

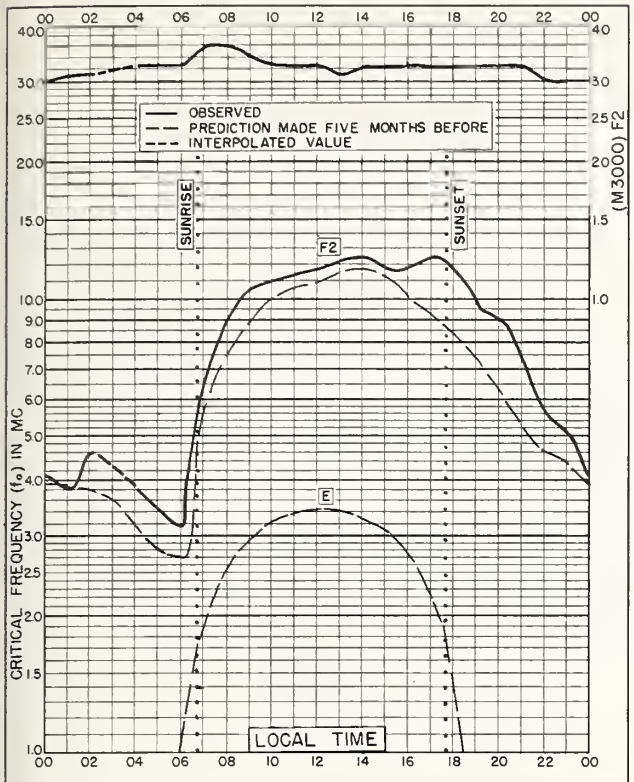


Fig. 104. DELHI, INDIA
28.6°N, 77.1°E FEBRUARY 1956

NBS 503

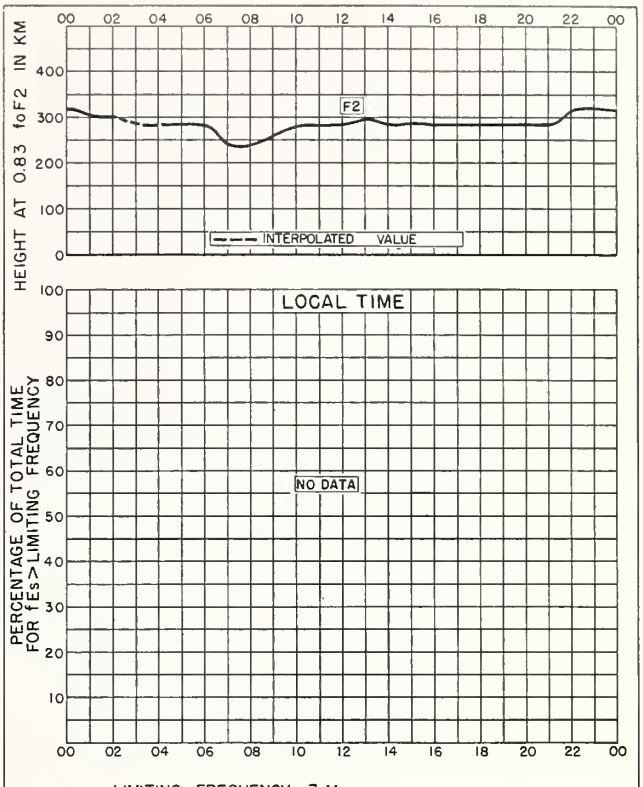


Fig. 105. DELHI, INDIA FEBRUARY 1956

NBS 490

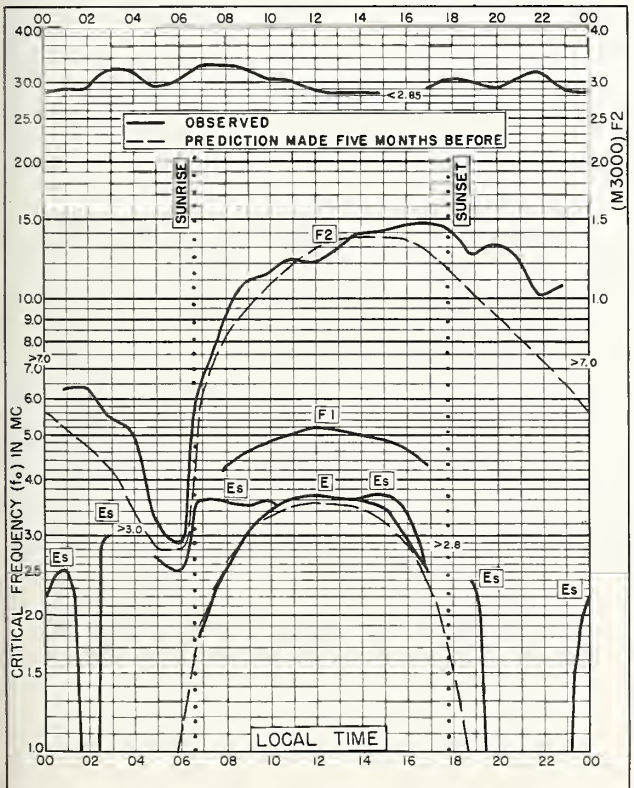


Fig. 106. AHMEDABAD, INDIA
23.0°N, 72.6°E FEBRUARY 1956

NBS 503

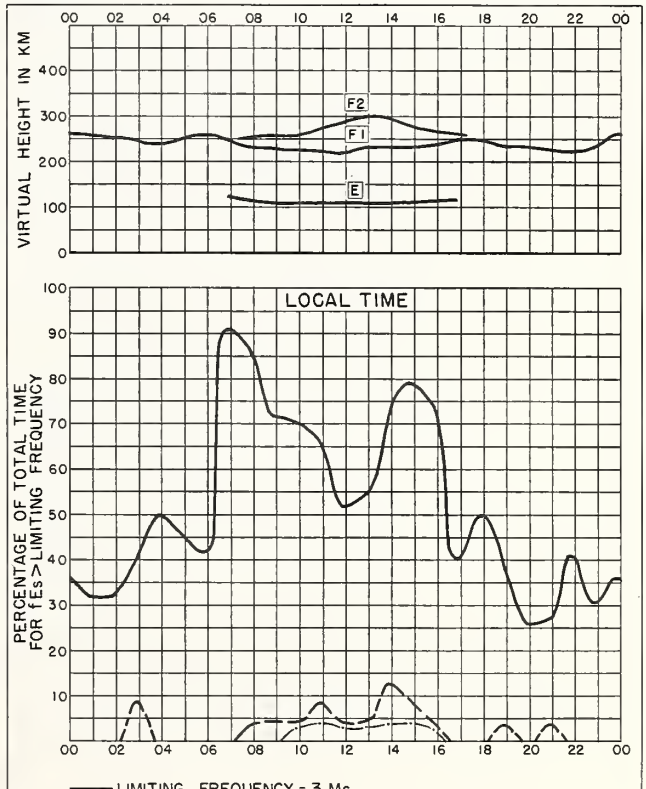


Fig. 107. AHMEDABAD, INDIA FEBRUARY 1956

NBS 490

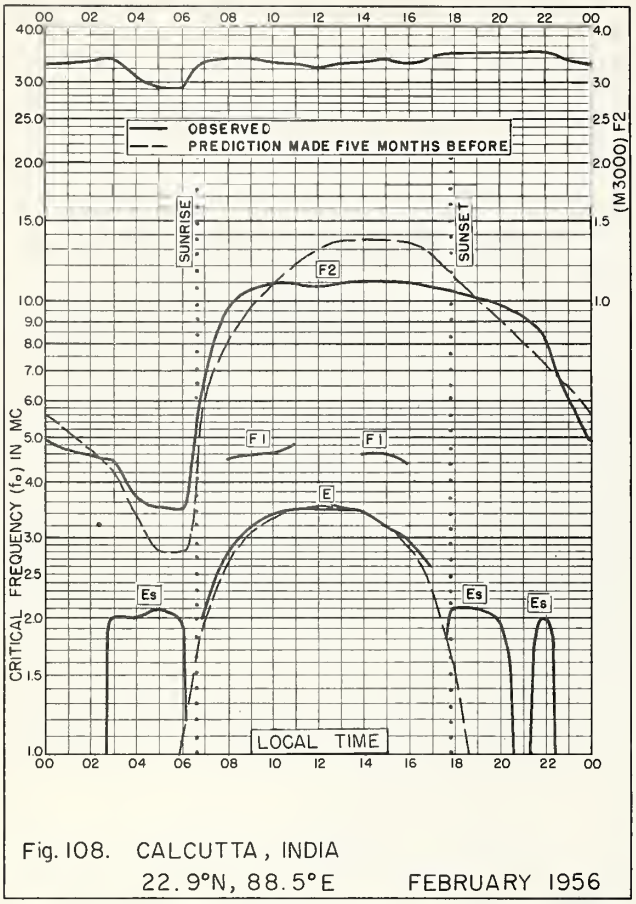


Fig. 108. CALCUTTA, INDIA
22.9°N, 88.5°E FEBRUARY 1956

NBS 503

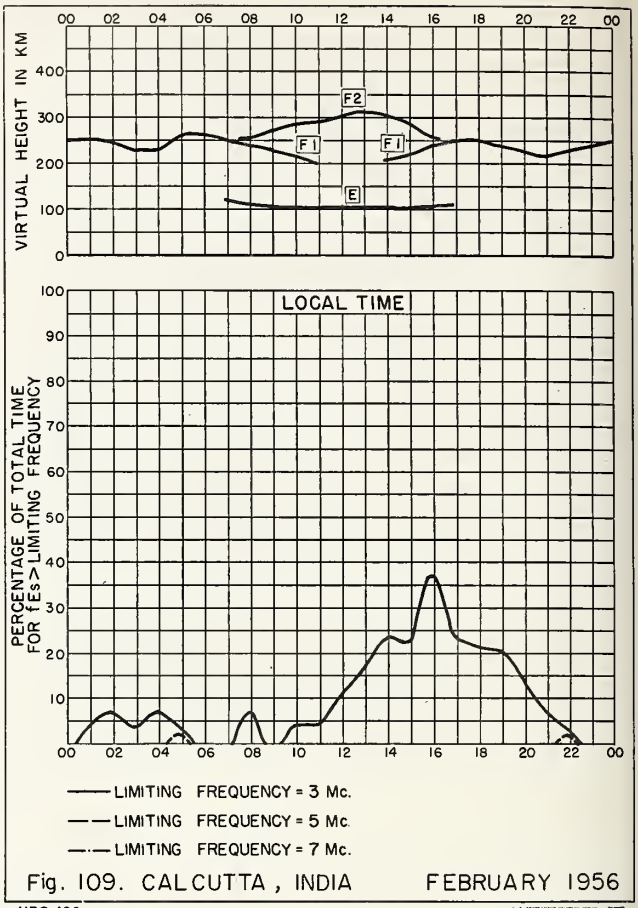


Fig. 109. CALCUTTA, INDIA FEBRUARY 1956

NBS 490

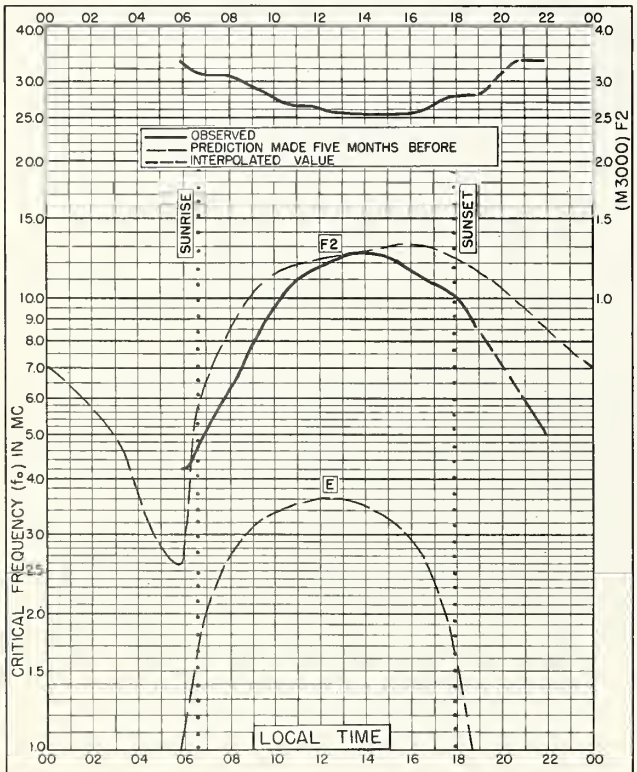


Fig. 110. BOMBAY, INDIA
19.0°N, 73.0°E FEBRUARY 1956

NBS 503

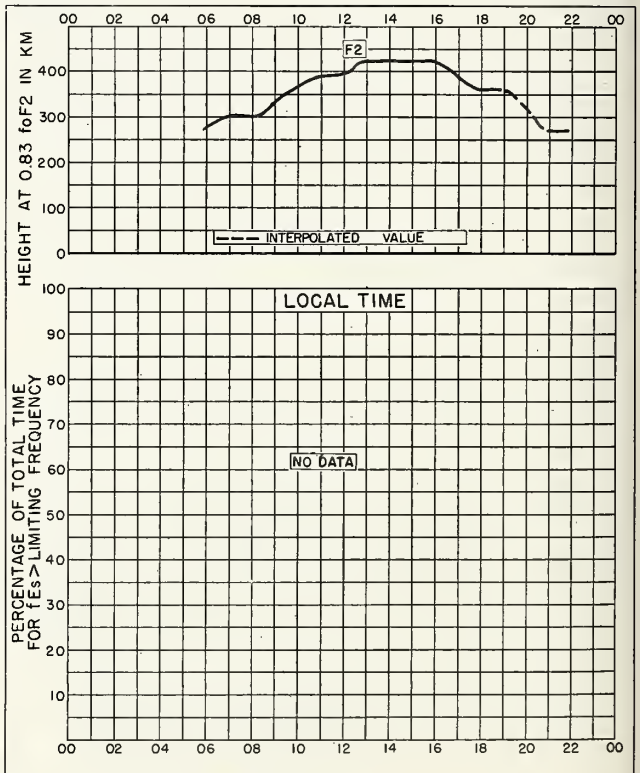


Fig. 111. BOMBAY, INDIA FEBRUARY 1956

NBS 490

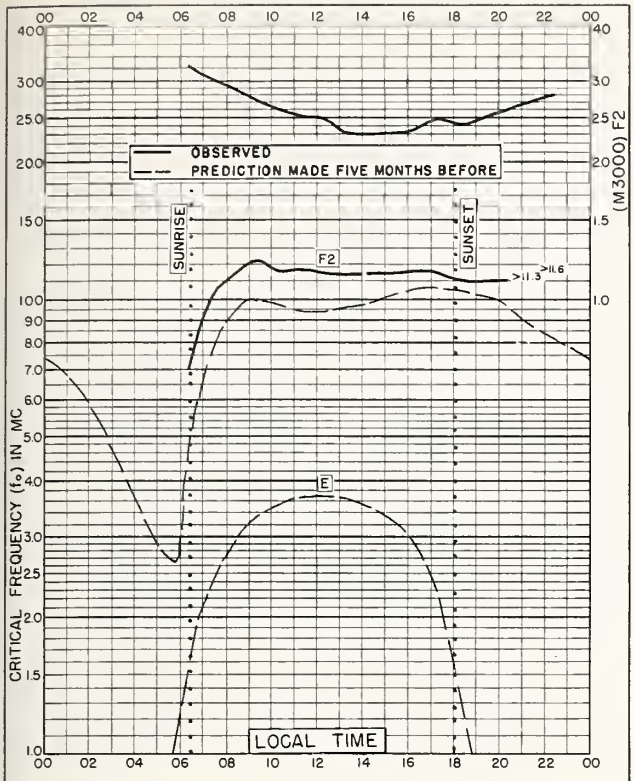


Fig. 112. MADRAS, INDIA
13.0°N, 80.2°E FEBRUARY 1956

NBS 503

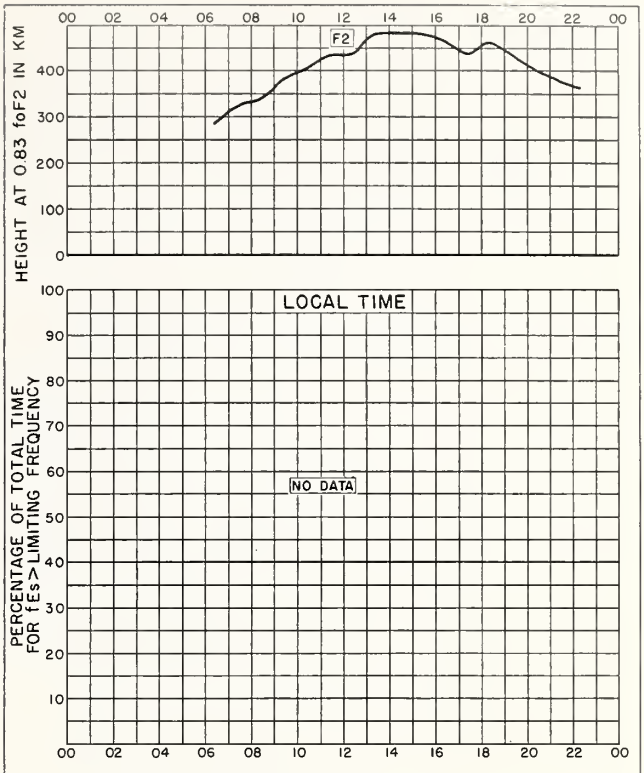


Fig. 113. MADRAS, INDIA FEBRUARY 1956

NBS 490

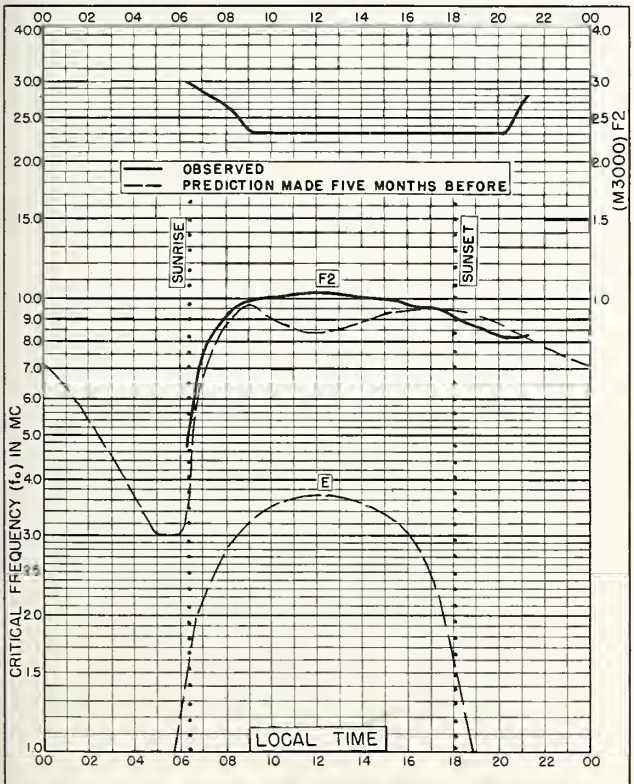


Fig. 114. TIRUCHY, INDIA
10.8°N, 78.8°E FEBRUARY 1956

NBS 503

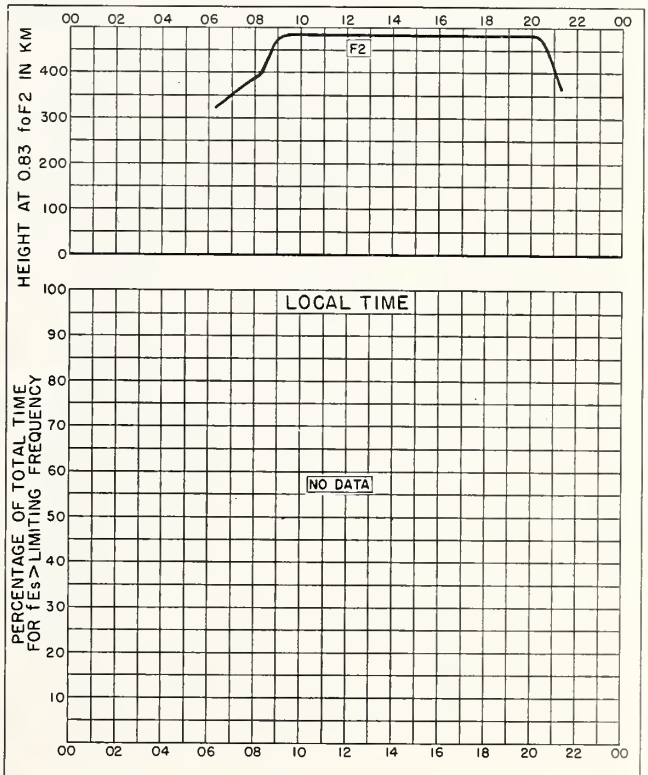


Fig. 115. TIRUCHY, INDIA FEBRUARY 1956

NBS 490

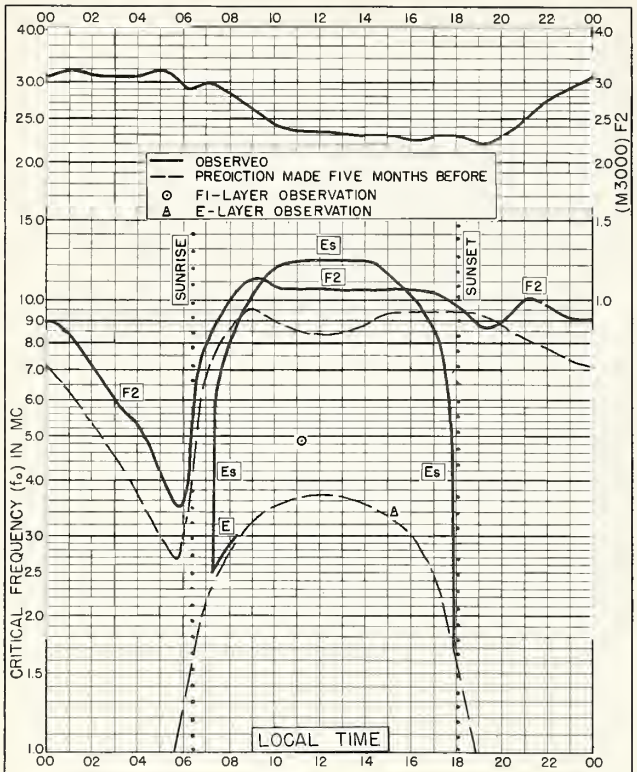


Fig. 116. KODAIKANAL, INDIA
10.2°N, 77.5°E FEBRUARY 1956

NBS 503

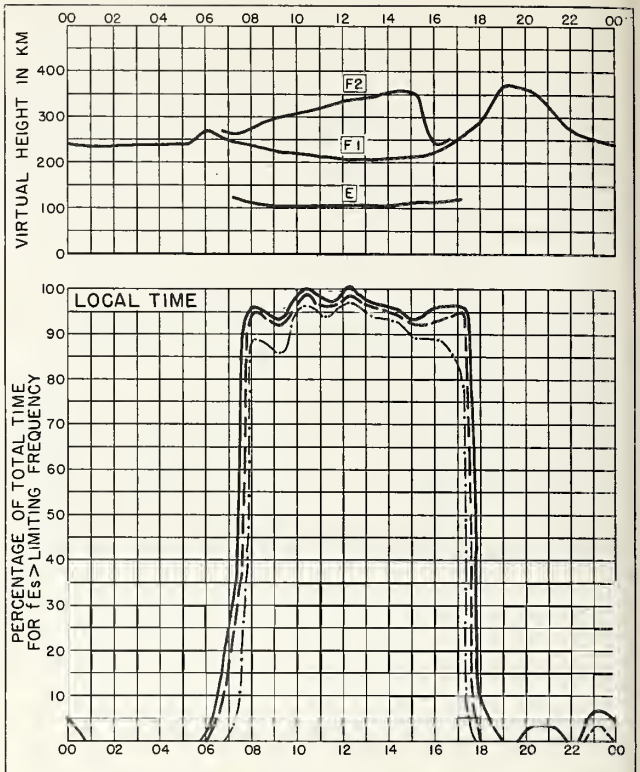


Fig. 117. KODAIKANAL, INDIA FEBRUARY 1956

NBS 490

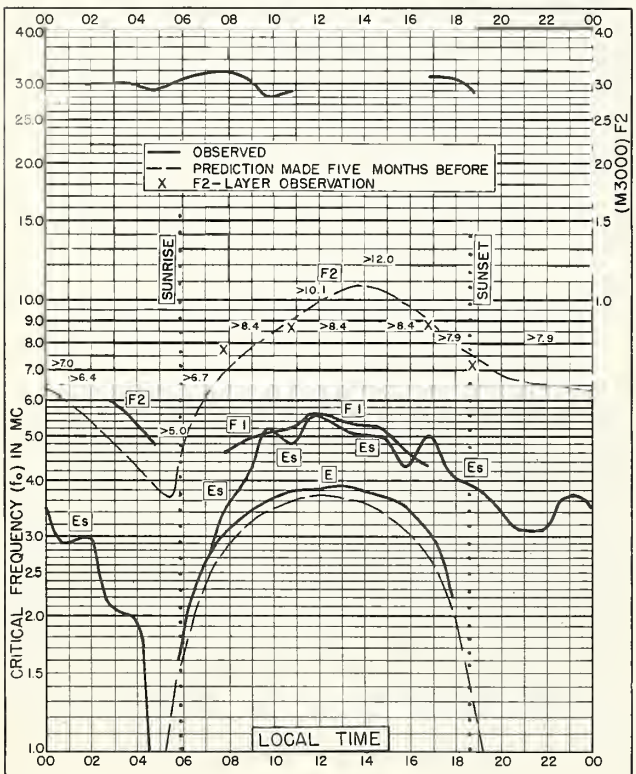
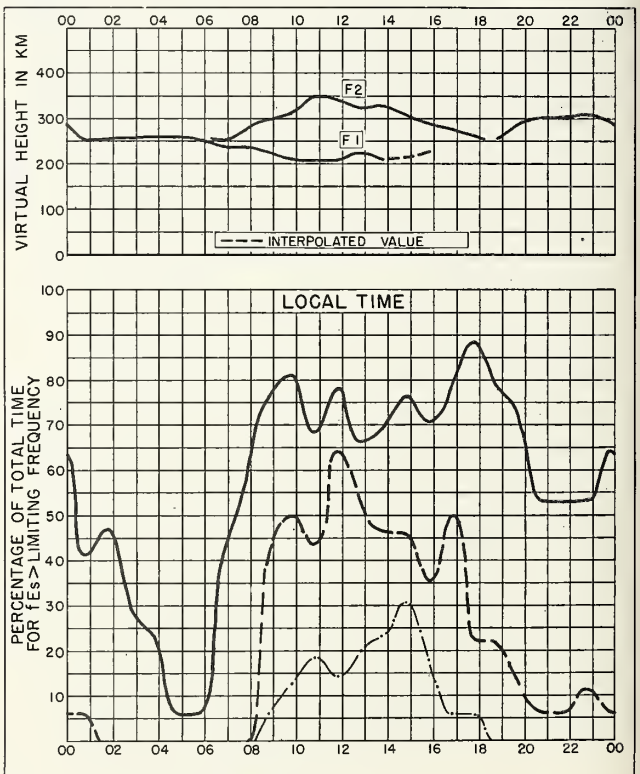


Fig. 118. TOWNSVILLE, AUSTRALIA
19.3°S, 146.7°E FEBRUARY 1956

NBS 503



FEBRUARY 1956

Fig. 119. TOWNSVILLE, AUSTRALIA

NBS 490

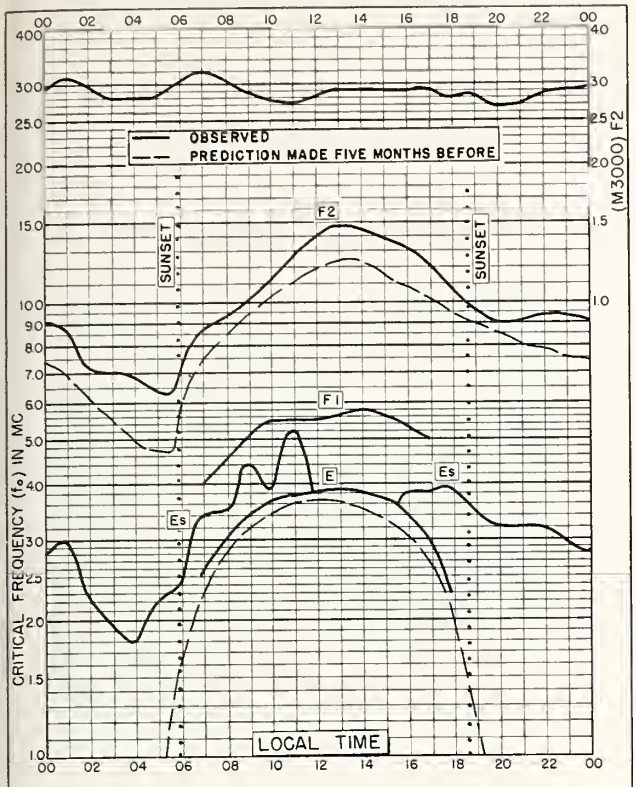


Fig. 120. RAROTONGA I.
21.3°S, 159.8° W FEBRUARY 1956

NBS 503

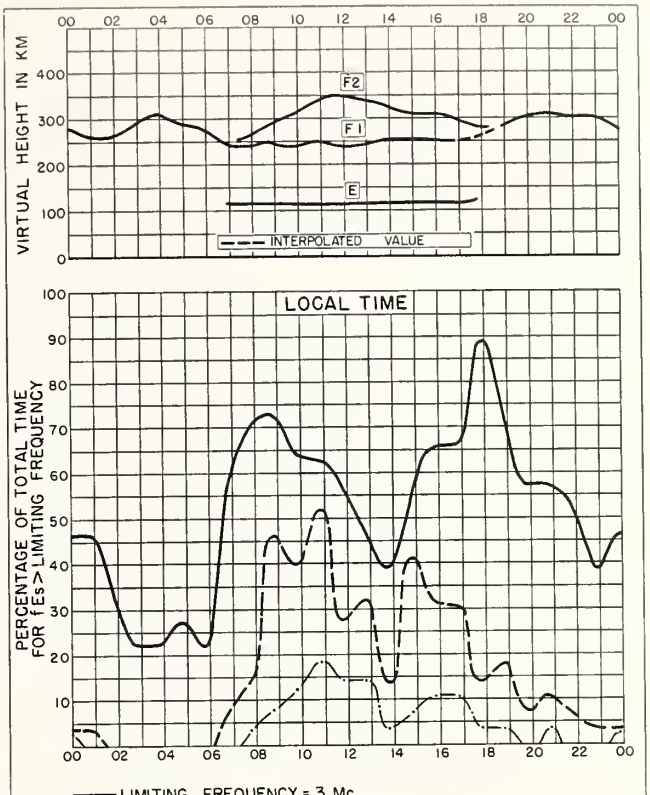


Fig. 121. RAROTONGA I. FEBRUARY 1956

NBS 490

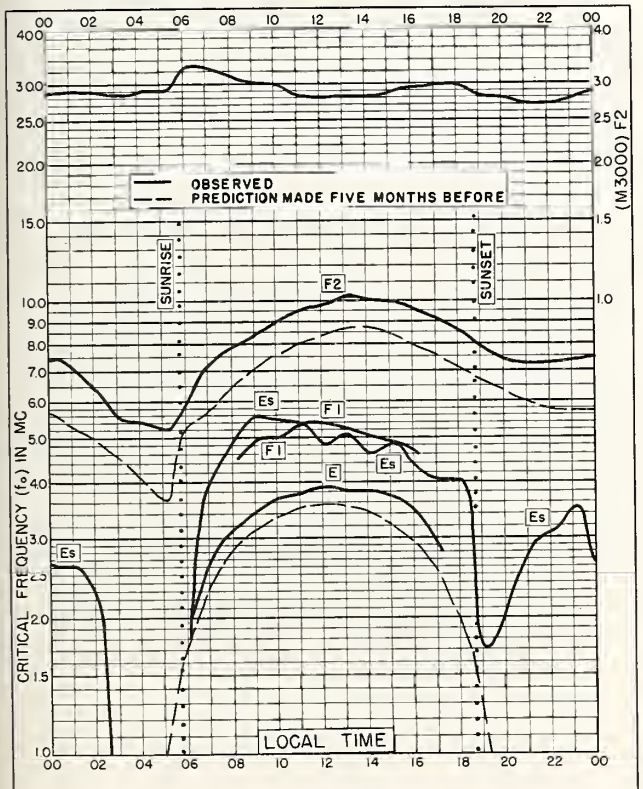


Fig. 122. BRISBANE, AUSTRALIA
27.5°S, 153.0°E FEBRUARY 1956

NBS 503

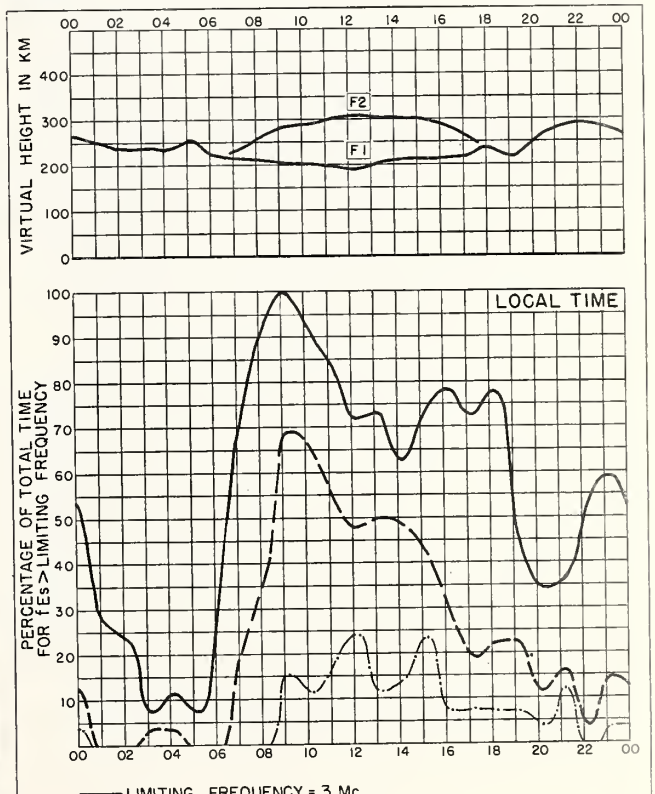


Fig. 123. BRISBANE, AUSTRALIA FEBRUARY 1956

NBS 490

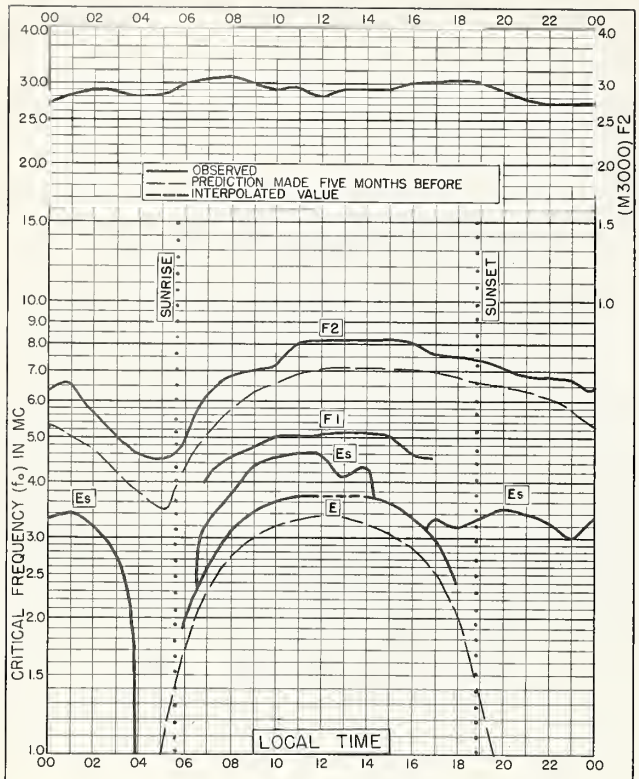


Fig. 124. CANBERRA, AUSTRALIA
35.3°S, 149.0°E FEBRUARY 1956

NBS 503

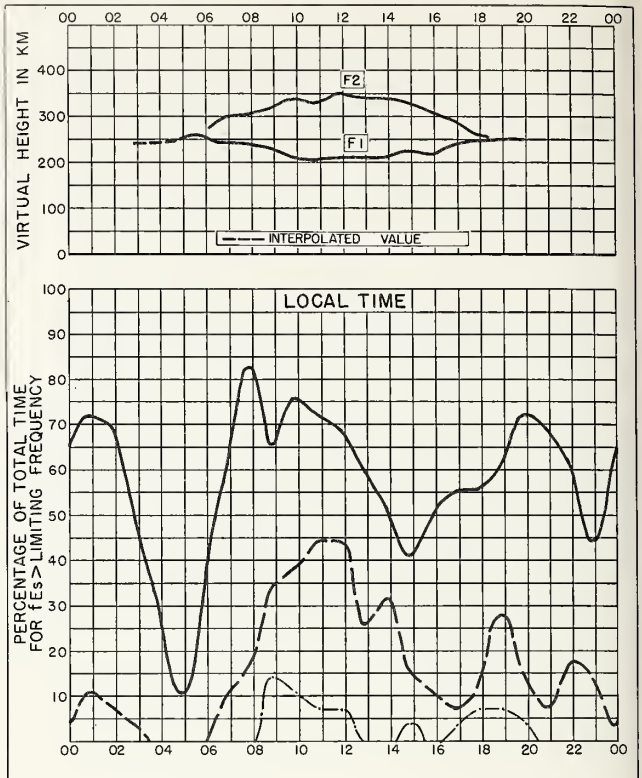


Fig. 125. CANBERRA, AUSTRALIA FEBRUARY 1956

NBS 490

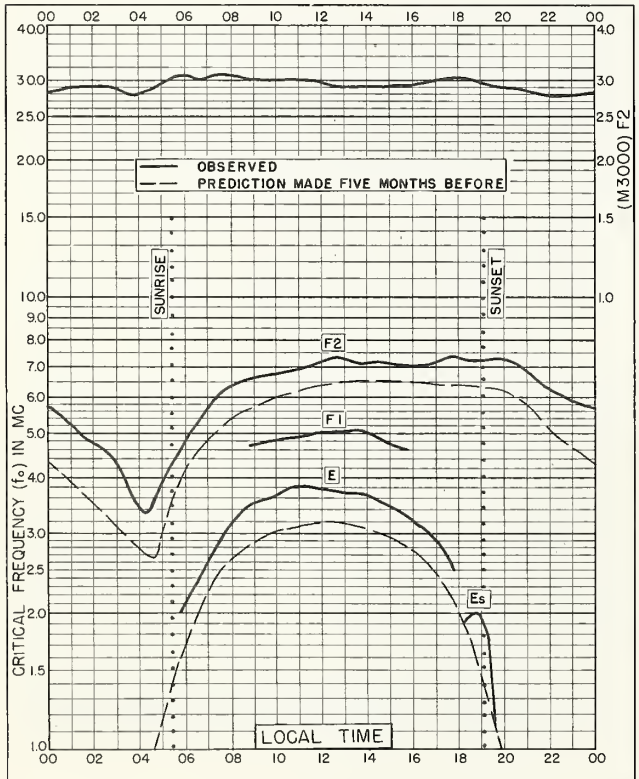


Fig. 126. HOBART, TASMANIA
42.9°S, 147.3°E FEBRUARY 1956

NBS 503

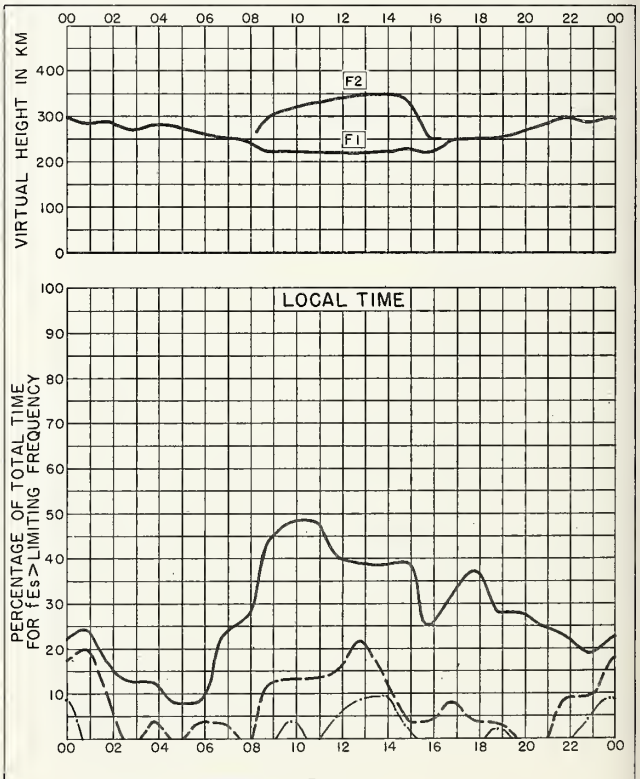


Fig. 127. HOBART, TASMANIA FEBRUARY 1956

NBS 490

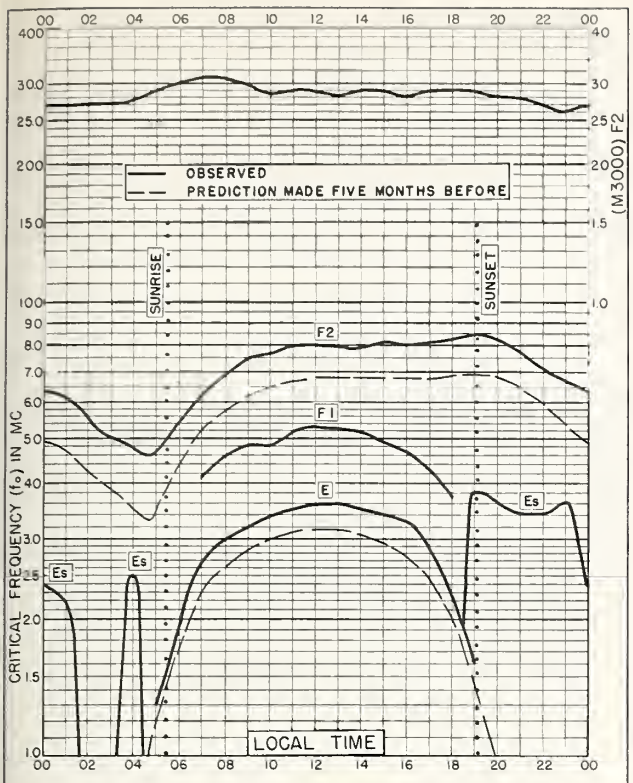


Fig. 128. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E FEBRUARY 1956

NBS 503

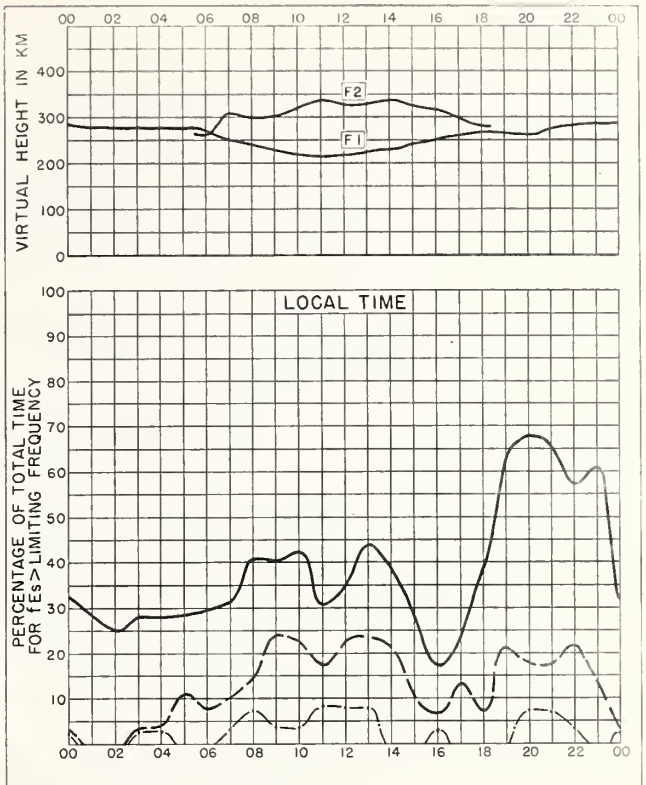


Fig. 129. CHRISTCHURCH, NEW ZEALAND FEBRUARY 1956

NBS 490

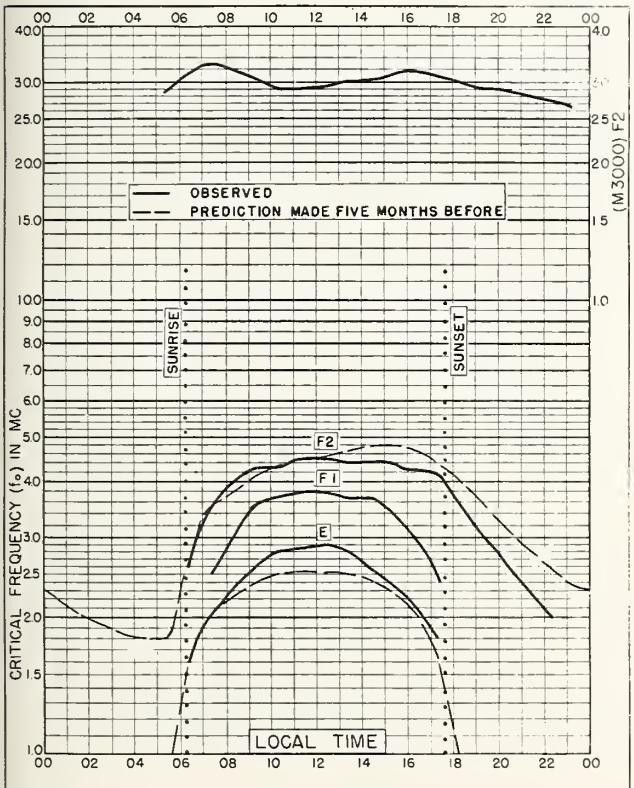


Fig. 130. CAMPBELL I.
52.5°S, 169.2°E SEPTEMBER 1954

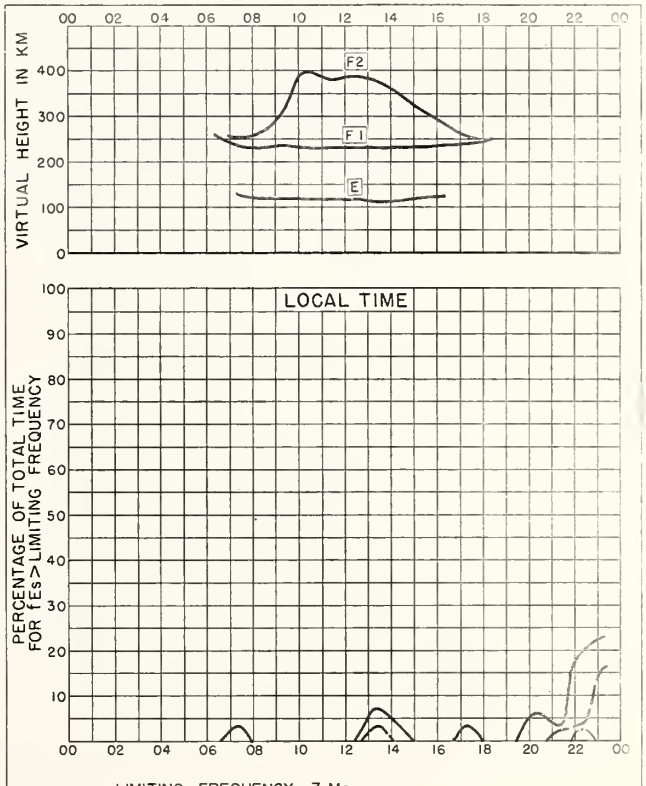


Fig. 131. CAMPBELL I. SEPTEMBER 1954

NBS 490

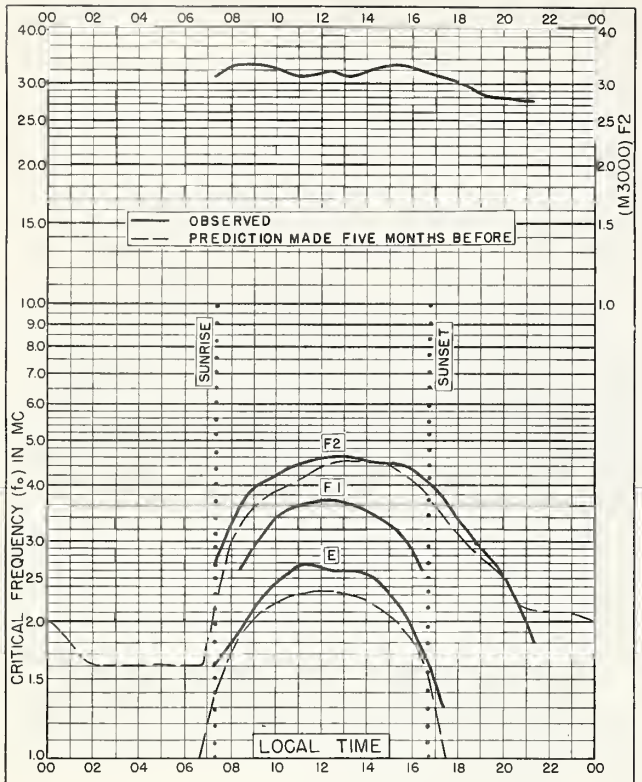


Fig. 132. CAMPBELL I.
52.5°S, 169.2°E AUGUST 1954

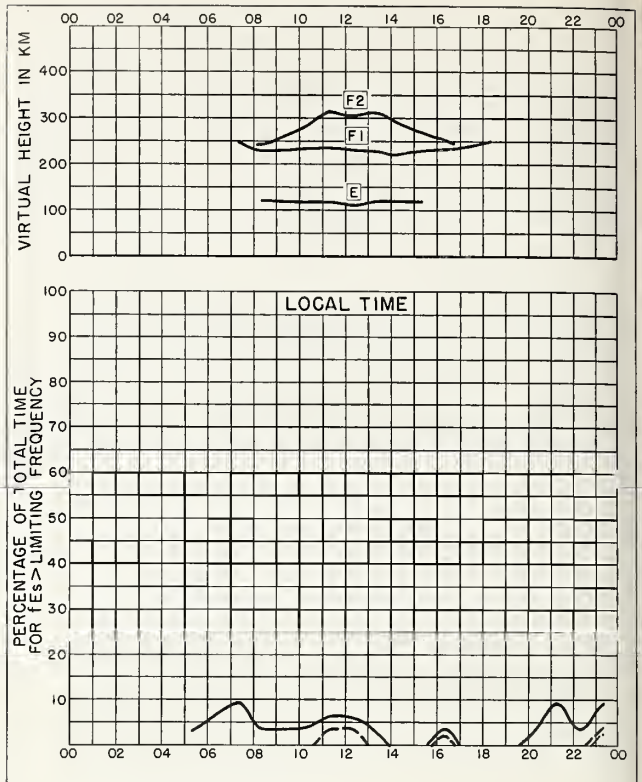


Fig. 133. CAMPBELL I. AUGUST 1954

NBS 490

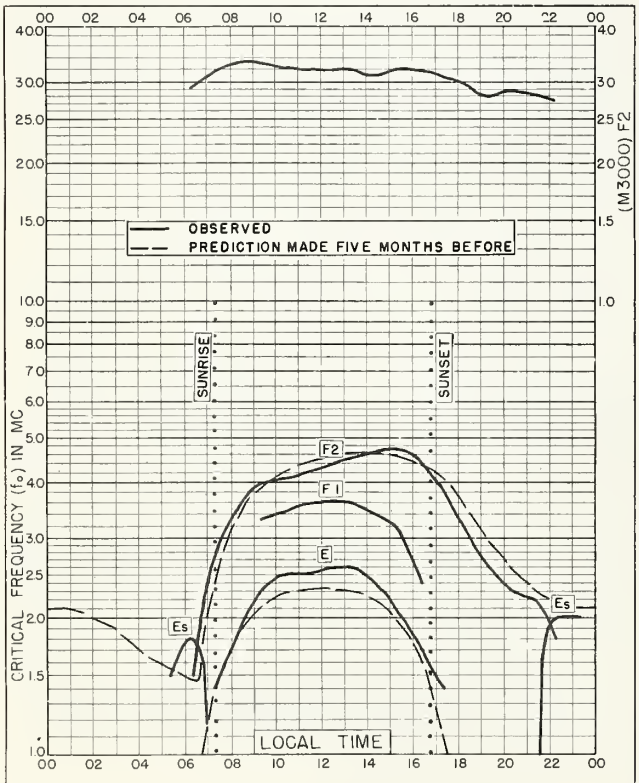


Fig. 134. CAMPBELL I.
52.5°S, 169.2°E AUGUST 1953

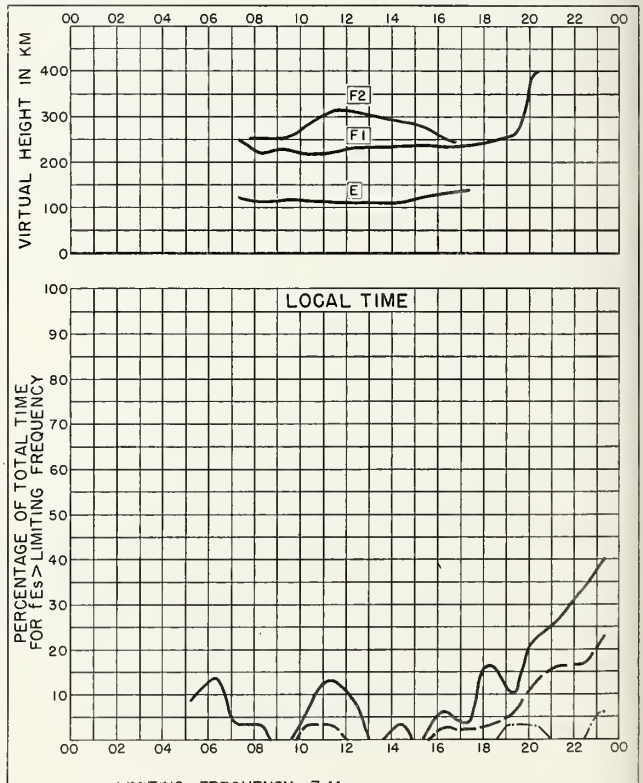


Fig. 135. CAMPBELL I. AUGUST 1953

NBS 490

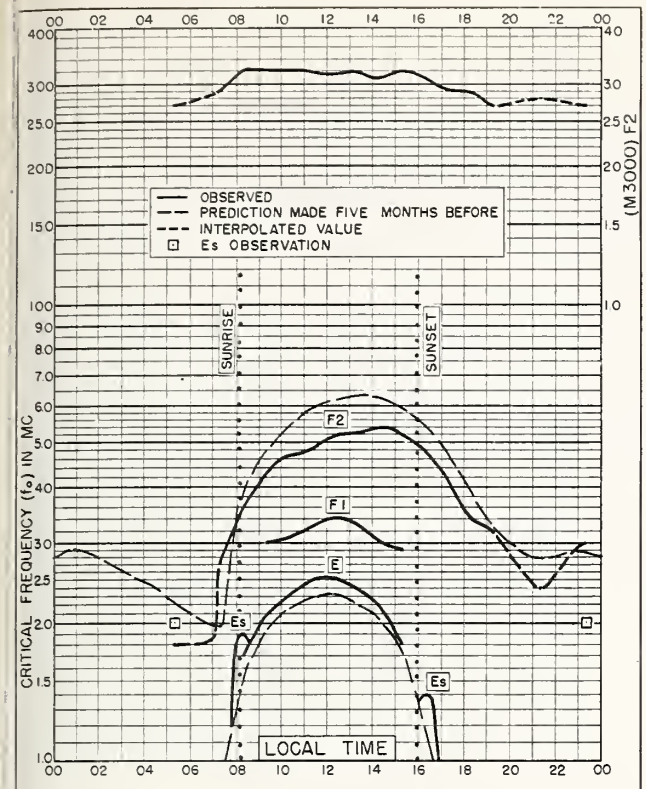


Fig. 136. CAMPBELL I.
52.5°S, 169.2°E JULY 1952

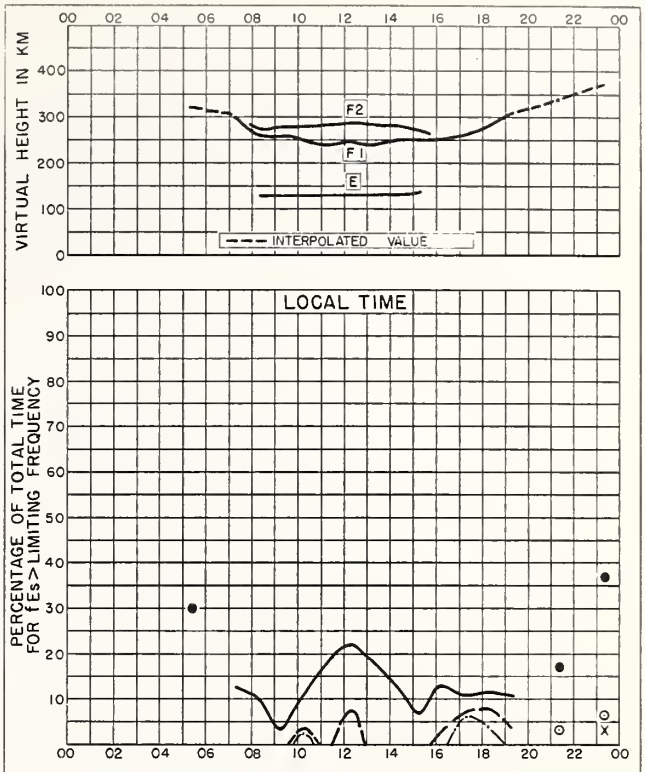


Fig. 137. CAMPBELL I. JULY 1952

NBS 490

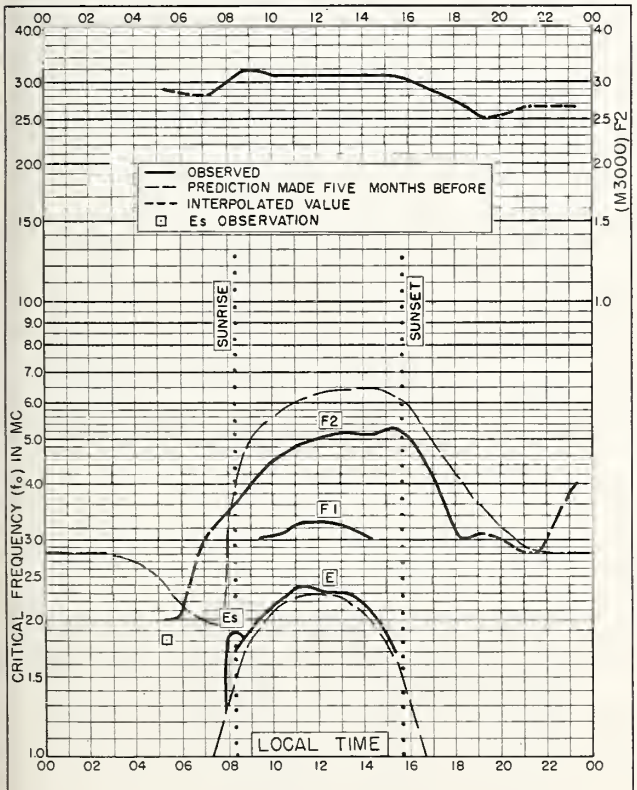


Fig. 138. CAMPBELL I.
52.5°S, 169.2°E JUNE 1952

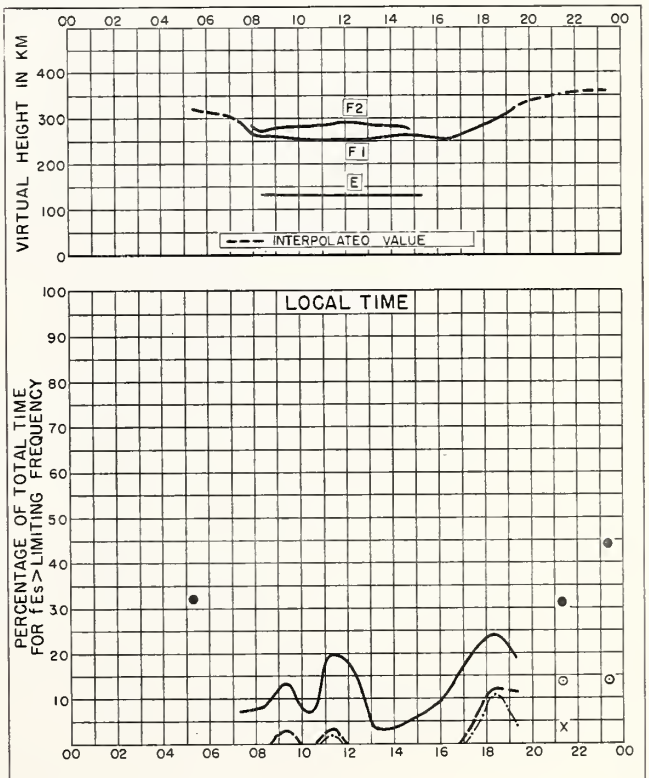


Fig. 139. CAMPBELL I. JUNE 1952

NBS 490

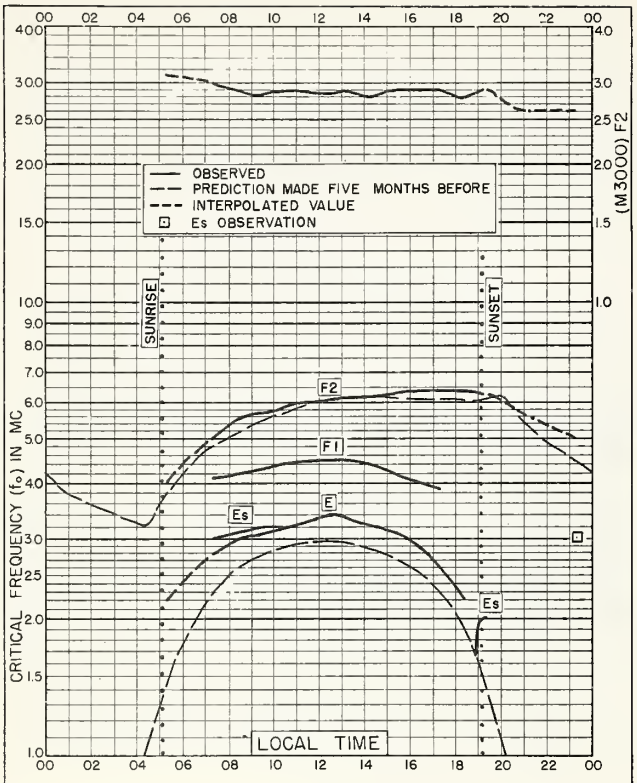


Fig. 140. CAMPBELL I.
52.5° S, 169.2° E FEBRUARY 1952

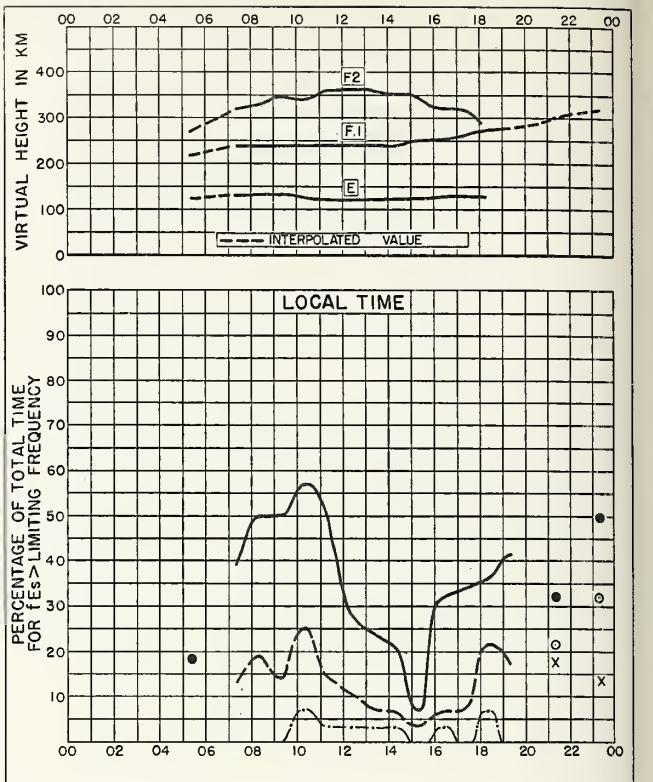


Fig. 141. CAMPBELL I. FEBRUARY 1952

NBS 490

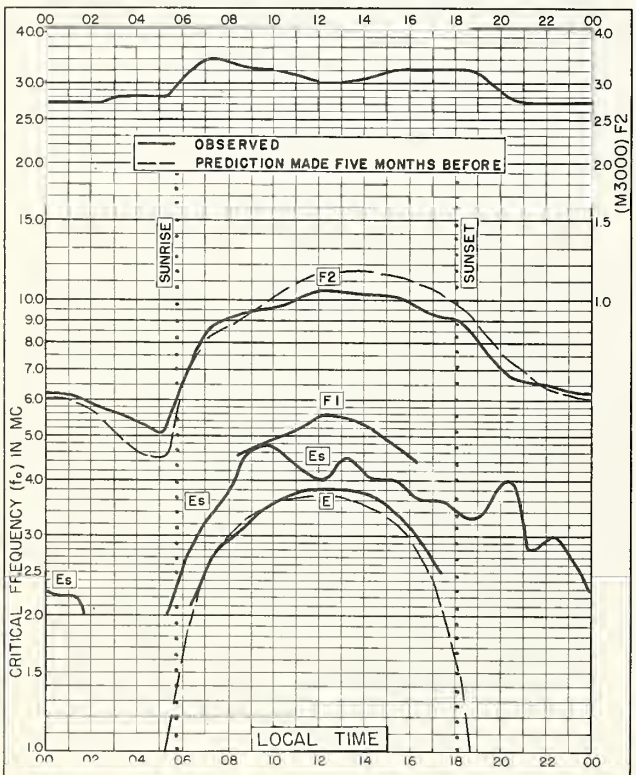


Fig. 142. TOKYO, JAPAN
35.7° N, 139.5° E SEPTEMBER 1946

NBS 503

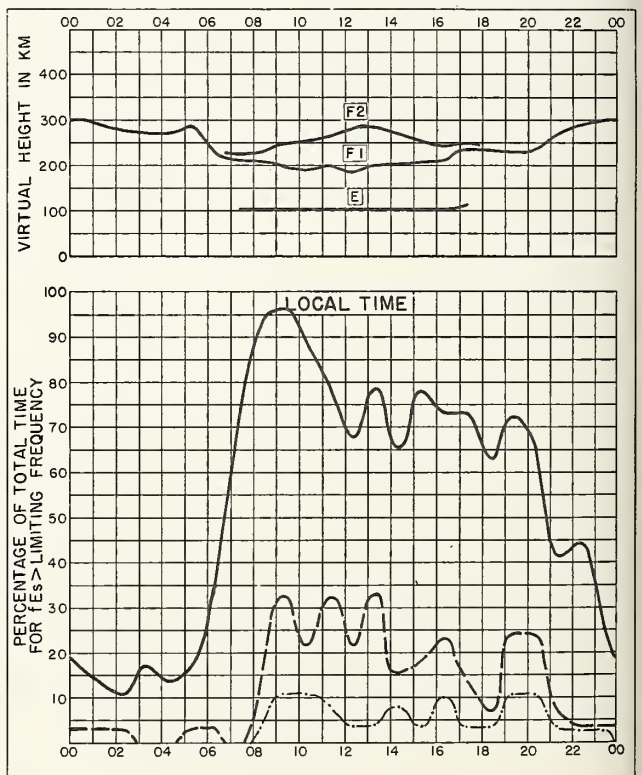


Fig. 143. TOKYO, JAPAN SEPTEMBER 1946

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